The Builder.

VOL. XLVI. No. 2136. SATURDAY, JANUARY 12, 1884.

ILLUSTRATIONS.

House and Stables, Hampstead.—Mr. Theodore K. Green, Architect 60
Hospital for Infectious Diseases, Newcastle (Plans, p. 64).—Selected Design by Mr. Arthur B. Gibson, Architect 62
Ratisbon Cathedral.—View from South Aisle, looking East 66, 67
Church, Vicarage, and Parish Room, Christ Church, North Kensington, London.—Mr. J. E. K. Cutts, Architect 71
Presbyterian Church (of England), Hartlepool.—Messrs. T. L. Banks & Townsend, Architects 73

CONTENTS.

The Water Requirements of London 49
The Loan Exhibition at Burlington House 50
The Enfranchisement of Leaseholds, and Compensation by Landlords to Tenants for Improvements in Dwelling-houses .. 52
Notes 53
The Architecture of English Fiction 54
America's Standpoint with Reference to the Fine Arts 54
The Threatened Strike in the Coal Trade 55
Royal Institute of British Architects 56
Indian Engineering 57
Cottage and Stables, Hampstead 58
Hospital for Infectious Diseases, Newcastle-upon-Tyne 58
The Interior of Ratisbon Cathedral 75
Church, Vicarage, and Parish Room, Christ Church, North Kensington 75
Presbyterian Church of England, Hartlepool 75
Fountains Abbey 75
Reversioners and the Acquisition of Rights to Light 76
The Proposed Sale of the French Railways, and the State and the Railways in France and in England 77
The Restoration of the Liebfrauenkirche at Arnstadt 77
König's Process for Purifying Water 77
The Wrought-iron Exhibition 78
The Architectural Museum 78
The Association of Public Sanitary Inspectors 78
Bristol and Clifton Junior Architects' Society 79
Breakages in Gas-pipes 79
Brighton Railway Station 79
Building Patent Record 79
Iron and Concrete 80
Salford Sewerage Works 80
Ensilage 80
Church Building News 80
Dissenting Church Building News 80
Stained Glass 80
Meetings 81
Fall of a Railway Bridge 81
Important Rating Appeal Case 81
Miscellanea 81

The Water Requirements of London.

THAT the decision given in the case of Mr. Dobbs might lead the water-consumers to take some steps towards what we have ventured to suggest as the true mode of solving the water-supply question, the appointment of a committee of water-consumers for mutual defence, was our suggestion in previously commenting on the case; and therefore we were not surprised to receive a fortnight later the report of a public meeting of the Water-Consumers' Defence League, in support of the movement having for its object the formation of branch Committees of the League throughout the metropolis.

Let us hope that, in the present case, the league will not be formed on narrow lines. If so, a great opportunity will be missed. The great motor power of the *argumentum ad crumenam*, the defence of the pocket, has been set going. But if the movement thus set on foot be restricted to the endeavour to keep down the water-rates, it will neither meet with the sympathy, nor possess the vitality and permanence, with which it may be invested, if the League take for their motto the words "Ample, pure, and cheap water." By "ample" we do not mean unrestricted, but proportionate to the real wants of districts and of individuals. "Pure" speaks for itself, or is easily to be defined; and "cheap" means as cheap as possible for an ample and pure supply, under the guarantee of the public faith. If the Water League "go in," as the phrase is, for such a supply, and if their counsels are sound, sage, and well advised, they may attain a degree of public confidence that will give them more authority in the matter, and power more thoroughly to serve the metropolis, than either the Metropolitan Board of Works, the Government, or the private speculators of previous years, have ever managed to acquire.

At the present moment it may be of service to the organisers of the League, or, at all events, it may be of service to the inhabitants of London, to block out, briefly and roughly, the features of the great problem which demands solution.

The "Greater London" of the Registrar General's returns, which is equivalent to the Metropolitan and City of London police districts, has an area of 446,494 acres, or 697 square miles. In 1881 it contained a population of 4,764,312 souls, living in 645,818 houses, the growth of which population in the past decade amounted to 22·6 per cent., and in the last twenty years, to 47·8 per cent. Of this large area, 341,063 acres are included within the statutory or presumptive districts of eight independent companies, who, five years ago, had laid out on land, works, and contingent expenditure, for the supply of an area of about 250 square miles, the aggregate sum of 11,614,179*l.*, which has subsequently been raised to 13,000,000*l.* in round numbers. The gross total of their revenue, from all sources, in 1876, was 1,248,116*l.*; their expenditure in maintenance, distribution, pumping, and all needful outlay, was 492,319*l.*, leaving a profit of 755,797*l.* This profit was variously stated as interest, dividend, or reserve; but, taken roundly, it was equal to a net earning of 6·58 per cent. on the expended capital. Since the dates given, these figures have grown, as we may hereafter show. But there may be an advantage in citing, in the first instance, figures that were elaborately analysed before the changes wrought by the introduction of the various abortive attempts to disestablish these existing companies. The calculation thus made, taking three per cent. Consols at 95, made the par value of the capital earning the return equal to 24,225,564*l.*

The water supplied by these companies, from 1869 to 1877 inclusive, was at the average rate of 32·77 gallons of water per day, per head of population. The march of opinion is to the effect that this supply is too high, rather than too low, and that by the introduction of constant service, and, still more decisively, by the introduction of any feasible mode of payment on actual consumption, the demand per head may be very seriously reduced, to the advantage of all parties. While 53·5 tons of water per head per annum was the mean delivery, the quantities supplied by the different companies ranged from 44·1 to 62·4 tons per head per annum. It may be thought that the service of manufactories had much to do with the difference, but this is hardly consistent with the fact that in East London, where the cost of water per ton delivered is 50 per cent. below the average, the supply per head is 4 per cent. below the average. It must, therefore, be regarded as probable either that there is an undue supply in the one district or that there is great waste in the other. These are matters demanding careful investigation; and are enough to show that any jump at an average charge, applicable to the whole of London, would create widespread discontent.

The actual cost of service and delivery varies considerably in the different districts. The East London and New River Companies, supplied by streams that rise at a higher level than that of the Thames where it is tapped by the Water Companies, pay less than half the cost incurred by the latter for the item of pumping. This is a natural advantage, of which it would be altogether unjust to attempt to deprive the districts so far favoured by position. Again, the outlay of capital by the companies varies from 17*l.* to 38*l.* per house, and from 2·27*l.* to 5·20*l.* per inhabitant served, an outlay which it would be quite unjust to charge all round as an average.

A careful analysis of the accounts of the water companies leads to the conclusion that the average price of three-halfpence per metric ton of water delivered in the houses, which allowed, in 1877, a mean net profit on capital, taking shares and loans together, of 6·58 per cent., is not likely to be materially reduced by any means that have been hitherto suggested. Where gravitation comes in aid, and where the cost per house of works and fittings, has been the lowest, the figure comes down (within a fraction) to a penny per ton. Where there is much pumping, together with costly works and fittings, the cost of twopence per ton is slightly exceeded. In any just measure for checking or reducing the charges of the water companies, these controlling features must be borne in mind. It may be thought, in the first instance, unfair that while an East London consumer is only charged 4s. 4d. a year for water, a West-end consumer should be charged 8s. 6d. for a supply which, though larger, he has no power to limit. But apart from the reform of charging by meter, or in some other way interesting the consumer in the economical use of water, it is hard to see how these disparities are to be materially altered. Of course, these remarks do not apply to that increase of 24 per cent. in water rental, since 1877, which has accompanied an increase of only 11·6 per cent. on the capital expenditure. These are figures on which the formation of a water-consumers' defence league is *primâ facie* justifiable. All on which we now insist is, that the rates of each company should be judged on the actual circumstances of each; and that when the consumer is spoken of, we must remember that there are different classes of consumers, or, rather, that the local cost of supply is in every instance, to some extent, a local question.

Local peculiarities, in fact, dominate the whole problem. Without reverting to either of those prodigious and questionable schemes which proposed to tap the sources of the

Severn, the Dee, or the Eden, and to create a new and most costly "New River" to quench the thirst of London, we are limited to the area of the basin of the Thames and its affluents, visible or underground, for providing the water supply of the metropolis. This basin covers an area of 3,300,000 acres, the average rainfall over which has been variously estimated at from 25 to 27 inches in the year. The lowest annual fall recorded was in 1832, being 16·1 inch. And if we take Teddington as the point of intake for supplies drawn from the river, we have to decrease the area of collection to 2,300,000 acres. On this surface, in the dry year 1832, four milliards, that is to say four thousand millions, of tons of rain fell, according to the gauge. How much of this is evaporated, absorbed by vegetation, or otherwise prevented from reaching the river, is unknown. The Royal Commission on Water Supply say one-third; Mr. Harrison says one-sixth; Mr. Bailey-Denton says three twenty-fifths run down the channel. If we take gaugings of the Thames for our guide we are led to the conclusion that a population of 7,000,000 souls would require to be supplied with nearly half the minimum summer flow of the Thames. If we suppose that 16 in. of rain could be collected and stored without loss from the 341,000 acres of the Water Companies' districts, it would provide, not merely 50, but 78 tons per head per annum for 7,000,000 of people.

We have not hesitated, on former occasions, to express the opinion that the failure to make direct use of the rain-water is a scandal to chemical science. Fifty years ago rain-water was almost everywhere collected from the roofs of houses; and, although not used for drinking, was available for other domestic purposes. The two facts which have revolutionised this state of things are, the delicate absorbing power of water, which enables it to collect all kinds of impurity, not only from actual contact, but from the air itself, and the enormous increase of population. To the latter are due, first the increase in smoke, soot, blacks, and injurious acids which the rain washes from the roofs, and secondly, that of the vapourous compound of the invisible results of the vital process, which is chiefly perceptible as evil smells. Of these two, visible and invisible pollution, the first is the least mischievous. It speaks for itself, and not only deters persons from using rain-water, but has led to the disuse of rain-water collecting apparatus. But the second, which is the most subtle and imperceptible, is also the most deadly. There is little room to doubt that the germs of some of the most terrible forms of disease are conveyed, or perhaps fertilised, by the gases. It is well known to those who have studied the subject that a cistern kept full of water, and protected from the entrance of impure water, will, in a comparatively brief time, show a deposit of foul mud if it is exposed to those unwholesome vapours which are usually found in the vicinity of our water cisterns. Thus, in keeping out soot and "blacks," we only half protect our potable water; and the half evil so avoided is the least dangerous half. It is becoming a recognised need of the future either to take some efficient means for protecting the domestic cistern, or to abolish it altogether by the use of constant service. But however far this may be carried out, the importance of some chemical mode of restoring the purity of water cannot be doubted. In 1877, out of an estimated street mileage in London of 1,460 miles, 711 miles, or nearly one-half, contained mains constantly charged, from which constant service was practicable. The present street mileage can hardly be less than 1,600 miles; and Colonel Bolton's latest official report gives a length of 903 miles of constantly-charged mains. This shows an advance; but it also shows that it must be long before we can anticipate the general abolition of the main cause of the impurity of "pipe-water," viz., the domestic cistern. Chemical aid would be welcome over at least 700 miles of London streets, and the expedients which would make the water of the cisterns fit for human consumption, would go very far to perform the same office for rain-water. Sooner or later, we feel convinced, science must grapple with the problem; and the sooner this is done the better for the water supply of the future.

Failing this aid on the part of the chemist, it is obvious that, year after year, we are more and more bound to make the best of all existing sources for the water supply of the metropolis, in face of a steadily increasing demand. Four and a half millions more tons of water, be it remembered, in round figures, will be required by the thirsty population of "Greater London" in 1884 than was provided in 1883. That is to say, that year after year we require the addition of a supply of water equal to that of a spring yielding thirty gallons per second for the entire year. Facts such as this have no ordinary significance. Whence is the supply to come?

From the basin of the New River and the river Lea it may be estimated that a daily influx of 200,000 metric tons of water, drawn from the present sources, and flowing through existing channels, may be relied on. This provides for about 1,400,000 souls. From the chalk springs, north and south of the Thames, a further supply of about the same amount, say 180,000 metric tons of water per day, is estimated as attainable. These two sources, then, may be looked to as providing for the supply of 2,750,000 souls. Four millions and a quarter of inhabitants, requiring 707,000 metric tons of water per day, have yet to be provided for; and, failing any direct utilisation of the rainfall of the district, have no source of supply but the Thames and its affluents. And the quantity of water thus required is equal to about half the summer flow of the Thames at Hampton, which Mr. Beardmore estimated at 1,435,000 tons per day. In the summer, moreover, when the river is lowest, the demand for water is the largest, and at present rates will exceed 800,000 metric tons per day.

Here the question of river purity assumes commanding importance. The abstraction of so large a portion of its flow from the Thames above London, to be returned to the river at Barking, must effect a great change in the *régime* of the river. The quantity now so diverted is not quite a third of the future requirements. The abstraction must lead to the ascent of a larger body of sea-water in the channel of the river, and, unless the disinfection of the outflow at Barking be then accomplished, there will be extreme danger of pollution. At the same time the population of the Thames valley will increase, not, perhaps, with the phenomenal growth of the metropolis, but at a rate above that of the country at large. And this increase, unless we have turned over a very new leaf as to the action of the local sanitary authorities, will mean increased pollution of the river. Thus, with an ever-increasing demand in quantity, made upon a service yearly becoming more doubtful as to quality, the water-drinker has, indeed, to inquire what protection he can obtain from the chemist.

From this glance at the controlling features of the London water supply it will, we trust, be seen how much cause exists for anxiety that the new association should not be allowed to drift into the position of a mere opponent of undue rating. That rating has been undue there is now no question; and that such injustice is best to be encountered by the co-operative principle of mutual support may be at once admitted. But the incidence of rating is controlled by law, and it is only necessary to set the law duly in motion to prevent abuse. This, however, is but a small part of the ever-growing problem of the London water supply. It is because there is a real *raison d'être* for an association of water consumers that we think it possible that such a body may effect more towards the settlement of the main question than has been effected, or even attempted, by the costly bungles of the last seven years. The remarkable blunder of the Registrar-General in 1876, severely commented on at the time, to the effect that by appropriating the property of the gas and water companies by the State, the "ratepayers might be supplied with gas and water at half the present cost," seems to have given the signal to every one who could construct a crotchet to do so at the expense of these companies. One very comprehensive plan for what it is, perhaps, hard to call anything but spoliation, was brought to an abrupt end by the award in the the Middlesbrough water-supply case, which showed that it must cost more forcibly to dispossess the holders of this kind of property than to let them alone. Of the proposals of the late Government we spoke without hesitation at the time when they were brought forward. Well meaning, no doubt, they were, but based on a total and contented ignorance of the full outline of the case. The proposals of the Metropolitan Board of Works for a double supply would have loaded the ratepayers with a needless and intolerable burden. And of late the question seems only to have been regarded as a crying injustice, the persistent disregard of which might be used as a lever to effect other changes in London. Of the iniquity of attempting to trade on one of the great necessities of human life, either for personal greed or for political and party ends, it is difficult to express too emphatic a condemnation. But our habits and institutions do not admit of that mode of dealing with the question which would be adopted by most civilised people. Neither the speculator nor the politician will take the pains to go to the root of the matter. It requires that strong sense of the importance of so doing which is developed by feeling where the shoe pinches, to induce any one to take the trouble to understand so complex a question, or to take the counsel of those who have taken that trouble. It is one thing to produce a scheme that will float on the market, that will pass the easy ordeal of House of Commons criticism, or that might add to the power and importance of an overgrown Board,—and quite another to ascertain how, with due regard to existing proprietary rights, the London of 1901 is best to be watered. To attack the subject on a more narrow ground than that indicated by these last words will be only to trifle, to "job," and, into the bargain,—to fail.

THE LOAN EXHIBITION AT BURLINGTON HOUSE.

IN spite of the immense wealth of this country in paintings, there is manifest evidence in this year's collection that the available sources for the highest class of exhibition of this kind are coming to an end. The interest of the exhibition is certainly not equal to any that we remember of its predecessors. There are some exquisite works, and some of remarkable interest, but there is a large proportion of works by the masters of secondary order, and some works of decidedly secondary order by great masters. To many it will seem to fall in more flat by contrast with the great interest which was excited last year by the collection of works of such strong and marked individuality as those of Rossetti, which were also to many visitors so little known. As to the real value of that collection we expressed our opinion on that occasion; an opinion, as we observed, at variance with many written judgments on it, but very much in accordance with much of that spoken judgment which does not find its way into the press.

Although thinking that Rossetti's value was much over-rated by critics, many of whom were his personal friends, or the friends of his friends, we can yet hardly pretend that there is the same vivid interest attached to the collected works of the modern English deceased painter who is this year specially represented at Burlington House. Many of the works of Poole, which are hung in Gallery V., are such as do not represent his peculiar genius, and are striking chiefly as showing how very Academical, in his earlier works, a painter could be, who became so poetic and original in style in his later productions. The contrast between the earlier and later works is, indeed, so marked that in feeling and aim they scarcely seem like the productions of the same mind. Poole started in his career as an "historical painter," producing works of very serious aim filled with many figures; very carefully composed,

but so obviously so as to seem theatrical in effect. This defect was more common at the time than at present, when the fault is rather in the direction of a too great endeavour after realism; but it is very marked in the most elaborate works of this period, "Solomon Eagle" and "Job" (289, 291). In the former the lunatic prophet steps forward between a crowd of people who seem arranged in the street to see his entry, as systematically as "supers" are arranged on a stage for the effective entry of the principal actor as the central figure. This is carried so far that all sense of the real horror of the scene in the height of the London plague time is lost; it is merely an artificial grouping, which leaves our sympathies quite unmoved. In the picture of the messenger relating to Job the slaughter of his servants by the Sabæans, which is very effectively grouped and finely drawn, there is the same staginess; the various actors lift their hands simultaneously at the proper moment in conventional expressions of surprise; the messenger is quite composed in his demeanour. Compare this with the little drawing in Blake's Series, and there is the distinction between talent and genius. These two works are dated 1843 and 1850 respectively; and had Poole painted only in this style, his works would not now be hanging in a separate room at Burlington House. His real genius arose later in his life, when he developed his feeling for romantic and ideal landscape, treated in a highly poetic spirit, and expressing in many cases a special and defined idea helped out or commented upon by some ideal figures which seem to blend with his wild imaginary scenes both in colour and sentiment. This combination of the sentiment of landscape and figures may be called "idyllic" in the works of such artists as Mason, for example; the word would not suit Poole, because the feeling is deeper and more melancholy than any we usually connect with that phrase. If we coined a word for his genius, we should call him a Spenserian painter; his rich and romantic landscapes seem to be the very scenes for the mythical personages and actions of the "Faërie Queene," which he occasionally illustrated, and which we wish he had worked more upon; it affords a mine of subjects which have been little heeded, perhaps because they require a special power and sympathy to translate into painting with any hope of success. Probably the finest and most typical of Poole's works in what we regard as his real style is "The Seventh Day of the Decameron" (300), hung at the top of the room. It is noticeable that this is almost the earliest work of his in this style; perhaps its great success gave the subsequent turn to his genius. It was painted as early as 1855, and well do we remember the impression it made on us on first seeing it at that time. The colour of the scene is not "the light of common day"; it is bathed in a mystic light of its own; and the figures, clad in draperies the rich yet subdued tints of which harmonise with the prevailing tone of the landscape, sit or recline listening to Filomena's song, with an expression of calm and half-melancholy musing, in keeping with the whole feeling of the work. There is no inharmonious note in it. It is the painting of a dream, and one of the most pleasing dreams that any modern painter has given us. As Poole advanced in years the figures more and more recede from his ideal landscapes, till, in one of the latest, the "Dragon's Cavern" (291), painted in 1877, the figure has almost disappeared, and he gives poetic interest and expressions through landscape alone. We do not see the dragon, but we are very well prepared to except anything uncanny to dwell in that threatening and inaccessible hollow in the side of the hill. Similarly, in "A Lion in the Path" (309), exhibited in 1873, the landscape, as we think we remarked at the time, is pervaded by the angry and threatening expression which the title suggests. The lion himself is not much, and would cause little concern if not backed by this lowering landscape. On works of this class Poole's reputation rests, and they are not only fine in themselves, but significant as a kind of reminder that there is such a thing as poetical work in landscape-painting, of which we see little now. But Poole's really great works were few, and of the small collection here (twenty-seven in all) some had been, perhaps, better omitted.

Among the older works which are most remarkable for pure beauty, independent of historical or educational interest, two in particular may be singled out, Romney's "Mrs. Maxwell" (197) and Gainsborough's "Nancy Parsons" (214). The former, which may have been touched up or cleaned in the draperies, but not to such an extent as to mar its effect, is a noble example of Romney's dignity and grace in feminine portraiture,—a full-length of a beautiful brunette in a white dress, set off by an orange silk scarf drooped behind her, leaning her head on one hand by the side of the usual pedestal. Romney, indeed, never gives us the brilliant originality of colouring which distinguishes Reynolds, his inferiority to whom in this respect has been hardly sufficiently recognised; his combinations, though effective, are of the more common and obvious order; but in drawing and expression, and his manner of posing his figures, he runs Reynolds and Gainsborough hard when at his best. He never, however, attained to such delicacy of colour and modelling of features as Gainsborough in such a work as the "Nancy Parsons," a face of the most exquisite and delicate beauty both of features and expression; remembering the social status of Nancy, it is difficult not to suppose that Gainsborough refined on his model, and that to him is owing the gentle, ladylike, and refined expression which seems strangely out of keeping with what one would expect to find in such a personality. In strong contrast with this is the downright and powerful work of Velasquez, on the opposite wall, "The Corregidor of Madrid" (153), a portrait betraying a latent sarcasm on the part of the painter against the pedantic and self-important officialism of his sitter. Among the other Gainsborough portraits, one of the best is a small half-length of "Canning as a Young Man" (36), a very carefully-finished head, the youthful softness and bloom of which (for it is that of a boy rather than a young man) seems intentionally emphasised by the rather thick and sketchy treatment of the white cravat. His full-length of the "Rev. Sir Henry Bate Dudley" (203) is not only a fine portrait, but illustrates what we said in our last about Gainsborough's animal painting: the dog is capital. Among the Reynoldses of the collection is one of the repetitions of "Hope nursing Love," of which another was in the Loan Exhibition of 1877; this is inferior generally to the other example, but better in the painting of the head of the principal figure, which in the Earl of St. German's picture is a good deal like a star-fish. The "Ino and Bacchus" hangs as a pendant to it, hardly one of the most satisfactory among Reynolds's works, though very rich in colour. His most characteristic example in the collection is the beautiful Mrs. Sheridan as "St. Cecilia" (209), a lovely but very quiescent Cecilia, seated, and accompanied by cherubs. Apparently this must have been one of Reynolds's fine and original works as to colour, but what colour the draperies, &c., really were when the work was first painted it would be hazardous to say.

The distinction between portrait which is mere portraiture, and portrait which is the work of genius, could hardly be better exemplified than in Lely's "Portrait of a Man" (126), and Rembrandt's head, also called a portrait (119). The latter is full of force and power; the former is a representation of a head, and that is all. The Italian portraits in the collection are few, and not of the highest order. Tintoretto and Antonio More figure among the names, but not at their best. Reynolds's portrait of Gibbon, belonging to the Earl of Sheffield (59), is an obviously good likeness, too full of character to be otherwise; and the half-length portrait of "Lady Sarah Banbury" (31) called by Mrs. Piozzi "gloriously handsome," but remarkable even more for the interest and expressive originality of her countenance, is one of the happiest specimens of Reynolds's portraits of the ladies of his day. Zoffany's portrait of "Garrick as Sir John Brute" (55), and "Macklin as Shylock" (54), the latter including a portrait of Lord Mansfield as the judge in the trial scene, have interest and spirit; the expression of Macklin's face is admirable, and gives a clear indication as to his general reading of the character of Shylock, though it is a somewhat coarse performance.

Rubens's great, flaunting, powerfully-drawn, allegorical picture of the "Glorification of a Prince of Orange" (150), one of those paintings in which the movement is carried on in a receding perspective, so that we have a view of the soles of the feet of the hero as he is drawn or shoved upwards by fat angels and other gross spiritual beings, male and female, occupies part (a very large part) of one end of the long gallery. It displays great qualities of drawing and foreshortening of plump and ruddy nudities, after the manner of the Amsterdam master. Among the lesser Dutch pictures, less in size, but certainly not in merit, there is a good Ostade belonging to Earl Howe, exhibiting that "delicious brown tone" on which Sir G. Beaumont commented to Wilkie in looking at one Ostade, only to receive the reply, "Ra-ally, I think I see Prussian blue in it," Wilkie having a Prussian blue mania at the time. Terburg's "The Letter" (122), lent by the Queen, has the same elements as his other variations on the same theme; in this case, the young woman standing has her side face to the spectator. The interest in these works of Terburg's is partly, perhaps, in their very vagueness of subject; his colour is usually fine, and his figures are nearly always dignified and of marked character, and the pictures become like outline scenes of a novelette, which the reader may fill in according to his fancy. Earl Howe's "Cuyp" (129) is a fine specimen, notably for the beautiful painting of the middle-distance landscape, with its quiet "brimming river" reflecting the equally quiet craft in its waters. Among the portraits is one of the "Baroness Dacre" (66), by Greuze, and another Greuze, interesting as being rather out of his usual line, "The Miser," (110), expressive though repellent head. Metzu's "Pleasures of Taste" (111), lent by the Queen, and Teniers's painting of the interior of his own studio, may be mentioned as among the more interesting of the Dutch paintings of this class.

Among the landscapes special attention seems to have been directed towards getting some good representation of Richard Wilson, by whom are several fine works, among others "The Villa of Mecænas" (45), a painting with greater variety of incident than is usual with Wilson; and "The Falls of Tivoli" (202), the composition of Claude, translated into the colouring of Wilson; "The voice is Jacob's voice, but the hands are Esau's." Of Claude himself there are one or two fine specimens, the largest of which is "Philip baptising the Eunuch" (167), a very lovely composition, into which Claude has introduced not only the character of Italian landscape, in spite of the title, but one of the ruined Classic buildings which he forgot were new at the time which his title indicates; in so simple-minded a manner did he put aside the unities. It would be a distinct gain to the picture if the chariot and nondescript horses were painted out. One of the finest landscapes in the galleries is Lord Scarsdale's large Cuyp (93), very Claude-ish in composition, and with less importance given to figures than is usual with Cuyp; the warm golden glow over the hills in the middle distance is very enchanting, but certainly not natural. A large Wynants has been hung over this, with remarkable effect of contrast, showing forcibly what a matter of "personal equation" of the artist landscape-painting really is; for these two paintings should be scenes in two different planets, one would suppose, if they were regarded as representing natural effect *per se*, instead of nature strained through the temperament and artistic proclivities of the painter. This view might be further illustrated by Rubens's grand bold sketch, rather than picture, called "Atalanta and Meleager pursuing the Caledonian Boar," but in reality a tumultuous mass of forest foliage swaying with the wind, and painted with great

force as far as the general representation is concerned; details of any special kind of tree growth there are none; the figures are with difficulty disentangled from the foreground. Two small landscapes by Gainsborough and Richard Wilson respectively are hung as pendants in the first room (29, 33), and form an interesting study of opposite qualities of style, in which Gainsborough certainly has the best of it. The large gallery contains a group of architectural paintings by Guardi and Canaletto, representing some of the best qualities of both painters.

The fourth room, in which, as usual, the early Italian and other pictures are placed, contains little that is of great interest, except historically. The minor names are mostly represented; there are a good many that are only labelled "School of ——." There is a fine bit of Orcagna (227), and a powerfully-painted decorative "St. George" (237), by Crivelli. A collection of six portrait heads, no artist's name (248—50, and 254—6), each with a stone arch on terra-cotta moulded imposts as a background, is one of the curiosities of the collection. Mr. Fulleylove's "Venus and Bacchus" (260) is named only "School of Poussin," but is a powerful bit of work, whether original or not; and beneath is a little Carlo Dolci, "St. Sebastian" (258), on a small scale, in which the painter's effeminacy of style does not strike one so much as in his larger works, and which at least has the merit of being in its way beautiful, among a good many things which are only curious.

THE ENFRANCHISEMENT OF LEASEHOLDS, AND COMPENSATION BY LANDLORDS TO TENANTS FOR IMPROVEMENTS IN DWELLING-HOUSES.

WHEN the Leaseholds Enfranchisement Bill was introduced into the House of Commons last year we made some observations upon it. It was not debated, however, during last Session, and consequently, from a Parliamentary point of view, was wholly still-born. Its chief promoter, Mr. Broadhurst, M.P., has, however, recently been calling public attention to it, and it is evident that it will again be introduced into the House of Commons, and under more favourable auspices will very likely obtain the honour of a debate, and of a rejection on its second reading. But however much its authors may point out the evils of the leasehold system in large towns, a system which we have always regarded as objectionable, yet we are unable to alter the opinion which we have already expressed that this measure is one which would be quite impracticable in its working. We would gladly welcome any plan by which the leaseholders of our large towns could become the owners of their habitations, for we have no doubt that nothing would conduce so rapidly to the improvement of the sanitary state of our houses, as well as to that of their beauty and convenience as dwellings, as the obtaining by the occupiers of the freehold of their homes. In fact, that the vast majority of the householders in our large towns have no permanent interest in the structures in which they live is fatal, as all experience of human nature and society shows, to the improvement of dwellings. There are other social and even political effects attending on this present system which it would take too long to enter into in detail here; but the absence of permanency in dwellings depresses and diminishes local feeling and political interest in particular localities. It may be taken for granted that nine-tenths of the London householders have scarcely any local interests, as the words would be understood in the provinces; and, though it would be erroneous to lay this down wholly to the existence of the leasehold tenures, yet there can be no question that it is very largely due to them, for few persons indeed regard their particular house as their permanent home. That this result is not a little due to this system is made clearer when it is borne in mind that tradesmen and those with some actual local connexion are the chief representatives of a locality in the London vestries. In their case any uncertainty as to their homes, if they do not reside at their place of business, is counterbalanced by the certainty that the latter is fixed, and, consequently, there at once arises that local feeling which must be at the bottom of any real local interest.

But to return more particularly to the measure in question, the difficulty of enfranchising leaseholds by means of a compulsory sale is that it is impossible to draw a line as to where the exercise of the power in question shall cease. An example will make this plain. Suppose an occupier has a twenty-one years' lease from a builder and that this Bill had become law. The occupier, having made arrangements with the builder (his immediate landlord), purchases his interest in the house. The occupier has then the remainder of a sixty years' lease from the freeholder. Under the provisions of the new Act, the occupier, as we will still continue to call him, goes through the forms under the Act and compels the freeholder to sell him his house, of which he thus becomes the absolute owner. He is pleased with his investment, and thinks with satisfaction that when he dies his widow and children will have a permanent home improved and beautified by his expenditure and taste. Circumstances, however, cause him to leave London, and he lets his house on a twenty-one years' lease. To his surprise his new tenant, who, after six months' residence, is pleased with the dwelling and wants to invest some money, serves him with notice that he must sell it compulsorily, and, whether he likes it or not, sell he must. This example shows, we think, the impracticability of this scheme, for, to use a rather vulgar saying, "what is sauce for the goose is sauce for the gander." For it is impossible to draw the line between the freeholder whose tenant has the tail end of a sixty or a ninety-nine years' lease and the freeholder whose tenant has fifteen years to run out of a twenty-one years' lease. Nor, again, if the freeholder is to be bought out, can the leaseholder who is intermediate between the freeholder and the occupier, who pays a ground rent and grants sub-leases of twenty-one years, very well escape. The reasons which make it advisable that the occupier should become the absolute owner in one case are equally full of force in the other. Of course, we all know that the great ground-landlords in our large towns are the persons chiefly aimed at by this Bill, but we again repeat you cannot schedule fifty great landowners in a Bill and allow their tenants to buy them out, and still leave the smaller landlords and their tenants on the same footing. There is also this further objection, as we pointed out last year, that if every leasehold tenant has the power to buy out his landlord, the result must inevitably be to do away with leases altogether; and it must be obvious that it is both convenient and right that many houseowners should be able, if necessary, to let their houses upon leasehold terms. Moreover, there is the further broad question whether the public interest so urgently requires the compulsory buying out of ground-landlords that the Legislature will sanction the introduction of a principle which has hitherto only been allowed when the necessity for it was quite certain.

But it may be asked, admitting, as we do, the evils of a leasehold tenure, on so large a scale as exists in many towns, and more especially in London, Is there no remedy to be applied? We confess we see no reason to suppose that any immediate and drastic remedy is possible, the change can only be effected by certain factors working indirectly and producing their consequences by degrees. Foremost among these factors must be placed the Settled Land Act, which, without doubt, will in time help to distribute the largest estates, among a larger number of hands, especially those of which personal enjoyment is impossible. But this Act must necessarily produce its consequences slowly; owners of property must first get accustomed to the idea of it at all, and then it will usually require some outside cause to set its machinery in motion. We confess, too, that some plan appears to be necessary by which ground-landlords, and in fact all landlords, should bear some part of the local burdens, seeing how much they benefit by particular localities. If we consider the immense sums which the railway companies, for example, contribute to local funds, it is absurd that landlords who benefit so largely from localities should simply draw their money and pay nothing towards local burdens. It may be said that if landlords are taxed they will get the money out of their tenants; but though this may be partially true, yet the moral effect of making landlords who simply draw money feel that they must bear some part of the burden is great; moreover, it is not always necessary that tenants should agree to be the actual payers of the tax, and if it were collected, say as a percentage on the rent, the larger amount of rent the landlord asked, the larger would be his contribution.

But there is a further measure which is desirable, having regard to the health of the community at large as well as in the interest of tenants. That is, that as between tenants and their immediate landlords the latter should be bound to pay a portion of the sums expended by the former in permanent improvements of a useful nature. The absence of any such law at present prevents many necessary sanitary and other improvements from being done by tenants, who have no means of recouping themselves their outlay, and no certainty that they will inhabit their houses for any length of time. One of the most attractive, and yet, from one point of view, disgraceful announcements which a house-agent can make when seeking to obtain a new tenant for a landlord is, that the last tenant spent large sums upon the draining, ventilating, and improving of the house, not one penny of which outlay, it is quite certain, he has ever been repaid by the landlord, although the latter makes use of those improvements to obtain a new tenant and charge him an increased rent. If it were compulsory on landlords to bear a proportion of the cost of improvements of a permanent nature, whether done with or without the permission of the landlord, the habitable condition of our large towns would be enormously improved, and an incentive to landlords to sell their houses so as to allow occupiers to become permanent owners would undoubtedly be given. It would, doubtless, be urged by opponents of this view that a tenant should stipulate by his contract that the landlord should pay something towards improvement, and, if he will not consent, not take the house in question. But those who argue in this fashion forget that in our large towns the owners of house property have now a practical monopoly, and that the competition between houseowners is, in these days, a mere fiction. It may be said that it would be unfair to a landlord to oblige him to pay part of the cost of an improvement which he considered unnecessary. We quite agree that improvements of a temporary nature, or those which might be called wholly artistic in the sense that they did not improve the habitability of the house, should be entirely at the tenant's cost; but anything which is of a permanent character, and improves the house simply as a dwelling-house, should be paid for in part by the landlord, whether he desires it or not, because it is to the interest of society in general that the habitations of the people should be made as perfect as possible, and it is wholly wrong and contrary to the interests of society that a man should be allowed to take the rent of a house and do nothing towards its improvement. If he takes the view that he would like to receive the rent, and do nothing more, the answer is that on grounds of public policy he cannot, to use a familiar phrase, have his cake and eat it. If he does not like the burdens as well as the benefits of property, then let him sell it, and cease to have either one or the other. Society is ripe for such a measure of compulsory payments by landlords for permanent improvements; but it is not, and we take leave to doubt if it

will ever be, prepared to sanction a measure of leasehold enfranchisement such as Mr. Broadhurst and his Bill proposes, since it is one which, as we have endeavoured to show, is practically unwarrantable. Let him endeavour, however, to pass a measure granting compensation to leaseholders of houses, and making it compulsory on landlords to pay part of the cost of permanent improvement, and he will be supported by a vast number of persons, and be responsible for a measure calculated largely to improve the sanitary, artistic, and what, in one word, may be called the architectural state of dwelling-houses all over England.

NOTES.

WE congratulate the Institute of Architects on having, at their annual business meeting on Monday last, untied their own fetters, and left themselves free to place at their head as President whoever may be deemed to be the leading representative of English architecture among the members, and the best able to fill effectively the important duties of a leader, instead of leaving this to a process of semi-mechanical selection by rotation. Of course, the qualifications for a good President are special, and may or may not be found united with the highest artistic attainments; but we should venture to exhort those who have power to vote in the matter at the next election to remember the first object for which the Royal Institute of Architects was founded, as set forth in the By-laws,—"the advancement of the Art of Architecture"; and to keep in mind the fact that architecture is an art, and not merely a business. The meeting having been officially private, we do not go into details, further than to remark that the large attendance and exceptional animation of some of the speakers on the occasion, left no doubt that strong interest was felt in the subject by many members who have not been among the most habitual attendants at the ordinary meetings of late years. The advisability of a more frequent change in the composition of the Council was also decisively affirmed by the meeting, though some have not, perhaps, realised the extent of change which the proposition immediately voted upon would entail. A too large and constant influx of "new blood" might lead to more fluctuation in the method and principles of conducting the business of the Institute than is quite desirable; but the principle having been affirmed, the details of re-arrangement have been left in the hands of the present Council, who will, we hope, be able to steer a middle course, to the advantage of all concerned.

THE proposed construction of a railway through the parks has much exercised the working classes of London, whose desire for the intact preservation of these great lungs of the metropolis appears to be sincere and unaffected. A deputation from the Trades Council of London had an interview with the First Commissioner of Works on the 4th inst. to inquire into the action of the Government in the matter. Mr. Shaw-Lefevre said that the Government had insisted that "the railway shall be constructed through the parks wholly in tunnel." At the same time he admitted that over part of the archway, when finished, there would be only 6 ft., and over another part only 10 ft. of earth. In such depths it is unusual, not to say impossible, to tunnel, and the fact that the construction of the line will involve a considerable amount of open cutting, afterwards to be filled up and turfed over, is one that will have to be faced. It would have been more satisfactory if the First Commissioner had explained what proportion of the new line it would be feasible really to tunnel, and what proportion will have to be executed in the more disturbing manner against which the Government do not, after all, wholly "insist."

THE "Art for Schools Association," of which Professor Ruskin is president, and Miss Christie is honorary secretary, has made a kind of practical definition of its aims by arranging, in a room lent for the purpose by the Fine Art Society, in New Bond-street, a number of engravings and photographs illustrating the class of works which it is proposed to introduce into schools. The idea seems to be to keep to such as illustrate subjects, either in history or real life, such as children would be likely to understand and sympathise with. The publishers are prepared, in many cases at least, to deal with the association on very liberal terms for works which are intended "for the use of schools," so that both the æsthetic and commercial sides of the matter seem at present to be in fair train. The specimen collection in Bond-street exhibits, on the whole, a very suitable class of work for the purpose, and we have not the slightest doubt of the additional interest and *instruction* (be it added) which children may gain during school hours from pictorial representation selected on such a principle. Our only doubt is whether this and some other efforts to bring art before "the people" may not come to be practically a higher kind of almsgiving. But the association may at least do good by assisting to start an idea, which may eventually be carried out on a more self-supporting principle.

THE address of Sir J. W. Bazalgette, on his taking the Presidential Chair for the first time last Tuesday at the Institution of Civil Engineers, dealt in a very able and interesting manner with the great subject of the government and health of London, affecting the interests of a population, as he reminded his hearers, equal to that of the whole state of Holland, and double that of Denmark. The address was, on the whole, rather a summary of the present situation than a plan for future action, except so far as some conclusions on this latter head would follow almost necessarily from the facts summarised. In speaking of the great sewerage works of the last ten or twelve years, Sir J. Bazalgette compared with this the state of the London death-rate during the recent years. The main intercepting scheme was practically completed and came into operation in 1870-71. The mean annual death-rate for the decade ending 1850 was 24·8 per 1,000; in the next decade 23·7; in that ending 1870 24·4; in that ending 1880 it had fallen to 22·5; and in 1882 to 21·4; and though *post hoc ergo propter hoc* has been decided to be bad in abstract logic, it may be fairly assumed to hold good, in great measure at least, in the logic of sanitation, and is, at all events, the only obvious and generally intelligible test in regard to that class of improvement in our method of living. Touching on the question of the housing of the poor, the President of the Engineers' Institution re-affirmed what has generally been accepted as the truth by those who can look at the subject in a rational manner (which, we admit, it is sometimes difficult to do, in view of the magnitude and tragic nature of the problem), that we have nearly sufficient legislative powers to deal with the subject, if properly exercised; but he strongly urged that more summary powers should be granted to compel landlords to maintain their houses in a habitable and cleanly condition.

THE Marchioness of Waterford calls attention, in a letter to the *Times* of Thursday last, to the project for a decorative art exhibition to be held in Dublin in February, under the auspices of the Royal Irish School of Art-Needlework. The main object of the exhibition is to encourage amateurs to produce well-executed decorative needlework, wood-carving, lace, &c., or designs for such work, for which prizes will be given; and objects of artistic value for a loan exhibition will be welcome. Every one will sympathise with the desire to promote artistic interest and power of design among Irish workers. We only add a caution against the kind of mistaken zeal which has occasionally shown itself in endeavours to promote a market for Irish art-work by artificial means, as was evidently done in regard to Irish lace,—a matter we commented on in our notice of the Irish lace exhibition at the Mansion House some little time back Let Irish art-work and design be shown to be superior to other work at the same prices, and its market will come; to attempt to force it can only lead to disappointment.

THE article by the First Commissioner of Works, in the current number of the *Nineteenth Century*, on "The Statues and Monuments of London," not unfitly culminates in the revival, with modifications, of a suggestion for the practical enlargement of our great national resting-place for the specially honoured among the dead. Referring to Scott's proposal for a monumental cloister or chapel, Mr. Shaw-Lefevre seems to have got out for a moment in his points of the compass, as this must have been to the south-east, not the "north-east" of the abbey, as stated in the article. He objects, however, to Scott's proposal, as bringing the new cloister too prominently forward in advance of the line of the abbey eastward, and involving an expenditure of about 200,000*l.* in the mere purchase of property for removal, along the line of Abingdon-street and as far as Great College-street, and hiding the old Jewel Tower at the back of Old Palace-yard. He proposes a monumental chapel not extending beyond the east line of Henry VII.'s chapel, on the east side of the Little Cloisters, and united to the abbey, in the manner proposed by Scott, by a covered passage passing under the buttresses of the chapter-house, clearing out the houses in Old Palace-yard and Poet's-corner and opening out the chapter-house and the south side of the abbey. This scheme would be certainly much less costly, and would secure some immediate monumental and architectural desiderata. Still, as it is a project in regard to which the saying may be applied, "Take heed what you are about, you work for eternity," we are inclined to advocate as large and grand a scheme as possible, leaving for posterity ample room for doing honour to the many great sons whom we fondly hope England may still have to lay to rest under monuments worthy of their fame and her greatness, if any of that is to be left to us. We have always regretted that the idea of a great mausoleum on the vacant ground south of the Houses of Parliament was allowed to drop. It would have been a splendid opportunity for something great in architecture, both as to scale and effect.

WE notice with great pleasure the announcement of a special exhibition of the works of Mr. Alfred Hunt, at the rooms of the Fine Art Society, 148, New Bond-street, the private view of which is fixed for to-day (Saturday). To those who know and appreciate the quality of Mr. Hunt's work there is no occasion to recommend such an exhibition; to those who unfortunately do not, it may, we hope, afford an opportunity for becoming better acquainted with the work of the most conscientious and poetic English landscape-painter since Turner, and learning to understand the delicate and refined beauty of his interpretations of nature. The collected exhibition of Mr. Hunt's paintings will not only be a source of great interest and delight to many, but it is the best and most pointed reply to the disrespectful treatment to which he has been subjected at the hands of the Royal Academy, who have the assurance to return works by such an artist, and hang "receipt landscapes" of their own on the line.

MR. G. AITCHISON has just completed, in conjunction with Mr. Britten, the decoration of the morning-room at Lord Leconfield's house, at Chesterfield-gardens. The architectural portion of the work consists (in part) of a large bookcase in ebonised wood, occupying one end of the room, with rich carved work in Renaissance style, and a frieze of foliage design inlaid in white on the black ground, with heads in medallions designed by Mr. Britten. The chimney-piece and over-mantel is a massive erection in ebonised wood with similar inlaid scroll ornament; portions of this are painted with scroll ornament in gold, with very good effect to the eye, but we rather regret the employment of surface painting along with inlay, the former method appearing deficient in

permanence and solidity when seen alongside of inlay. Mr. Britten has painted a clever and effective frieze, representing a party of Cupids attempting to mount the backs of dolphins, and finally coming to grief in the ride; a pretty and rather novel adaptation of an old artistic motive.

THE ARCHITECTURE OF ENGLISH FICTION.

"I designed to allure my readers with the variety of my subjects, and insinuate, if I could, the weight of reason with the agreeableness of wit."—STEELE.

No treatment of the subject we have in hand would be reasonably complete without a passing glance at the English essayists of the eighteenth century. Their works are essentially works of fiction. The writers call themselves Novelists, although they meant no more by the term than purveyors of news; the news element soon dropped out of their scheme, and their works are, in the modern sense of the word, novels. Every essay is a short story, and the characters which figure in them are mere creatures of the imagination. Sir Roger de Coverley will pair off with Colonel Newcome, and the Dorindas and Cynthias of that day are but the counterparts of the Amelias and Becky Sharps of ours. We were told by the first of this accomplished band of authors that the regulation of Taste (with a capital T) was a principal object with them, and that they intended to leave *no* topic connected with the general good of mankind untouched. Their works, like poor Tom Hood's "History of the World, by Percy Vere," may now be read in forty volumes. And very pleasant reading they are. The whole social economy of the time is laid bare for us to the minutest detail. The languid beau ogles and dangles across the stage, and the belle of the period admits us to the inmost recesses of her daily life and thought. The gravest subjects which can engage human speculation are treated with becoming decorum and seriousness, and the foibles and vices of mankind in general, and eighteenth-century man and woman kind in particular, are the subjects of a restless sportive raillery, and a searching, scorching wit. And over the whole is thrown that indescribable charm of style, in which the writers of these essays have never been surpassed.

But in these forty volumes you will scarcely find forty references or allusions to architecture. It is to be hoped that no reader will be at pains to count them, and, finding forty-one, put the present writer to an open shame.

A friendly critic has complained of an injustice done to Smollett in that it was stated in a previous essay that he ignored architecture. The word was badly chosen. But not altogether so. He has nothing to say of the beautiful Bath Abbey church, except that it strikes cold upon entering it, and that these old churches of the kind would be more comfortable if wainscoted. To him Durham Cathedral and Castle appear a "confused heap of stones," and the exterior of York Minster "cannot but be displeasing to the eye of every man who has any idea of propriety or proportion." "Towers and steeples serve to make the pile more barbarous." This, certainly, is not ignoring architecture, and Smollett is entitled to the benefit of the correction. If some of the passages in his works have dropped out of our memory, it is not worth while to renew our acquaintance, for, with all their undeniable cleverness, they have certain drawbacks. They resemble those ingenious modern fortifications of the Chinese, in which the too-curious explorers find themselves unawares in deep pits of filth. So much for Smollett.

Sir Richard Steele was himself appointed surveyor to the Royal Stables at Hampton Court. "Surveyor" is a word conveniently vague; and in those days of fitting or misfitting men who had earned the gratitude of the ministry with snug sinecures, the duties attaching to the post were probably difficult of definition. We may safely say that no professional qualifications were either exercised or required.

Are we to ascribe this reticence on his part with regard to architecture to modesty? In one of the papers in the *Tatler* we find this sentiment:—"It is ridiculous for any man to criticise *on* the works of another who has not distinguished himself by his own performance." Yet neither Steele nor Addison had any professional acquaintance with law or medicine, subjects which they handled with unconstrained freedom. It is probable that in the days of Queen Anne the public taste in the matter of architecture had settled down, and a subject on which no one had any misgivings was not thought a suitable one for discussion. It is hard to get up a controversy when all are agreed. Gothic art was hopelessly discredited, and no Walpole had arisen to discover in its neglect and decay those picturesque beauties which a later age admitted without reserve. An age which found its ideal in "Cato," and neglected the Elizabethan drama, could hardly be expected to admire the singular and fantastic charms of the Gothic church or Jacobean mansion, and the architecture and art of the first half of the eighteenth century were accordingly alike cold, stately, and formal.

The real views of the writers escape, as we before noted, as it were unconsciously and by accident. And we thus get incidentally a better insight into the facts of the time than when any attempt is made to describe them deliberately. Some of the views which passed without question strike us now as not without a humorous side. And one point which crops up now and then is the almost superstitious reverence which is paid to our too familiar friend, the sash-window. Steele is scandalised to find small warehouses and even private shops, supported on *Corinthian* pillars; and a row of tinpots shamelessly showing themselves for sale "through a sash-window,"—a piece of unpardonable effrontery on the part of the said pots.

In a series of humorous proposals for the enlargement of Bedlam, the architect comes in for part of the fun. The inmates are to be lovers who are, by presumption, out of their wits, and politicians who are to be admitted without examination. The architect, doctors, nurses, are all to be lunatics,—with this single proviso, that their mental aberrations is not to be connected with the function allotted to them in the scheme.

Occasionally due homage is paid to art, and architecture, with painting and sculpture, is said to lift up human nature, to contribute to the embellishment of life, and throw into shade its meaner parts.

Such general sentiments as these are easily thrown off by writers who were always writing, and could not always stop to consider what they should indite. It is when they sit down in earnest to treat of architecture directly and deliberately that we see how shallow and inchoate their ideas were on the subject Steele promised a paper devoted to the art; but, like too many of that light-hearted genius's promises, it was never redeemed. Addison's papers on the pleasures of the imagination could not be completed without a section on architecture, and it is strange to see with what hesitation and distraint he takes up his task, sheltering himself behind a long quotation from a learned French author, whose opinions the essayist was happy and eager to quote as a relief from the further treatment of a matter which he felt to be embarrassing. The preliminary flourishes anent the art which tends more than any other to affect the imagination are dexterously executed, as, of course, they could not fail to be. In closing with the subject, the weakness of the author is apparent. First, he desiderates grandeur of scale as a prime condition of architectural success. In this respect the ancients had all the advantage on their side. An "old author [query name] said that the foundations of the Tower of Babel which were to be seen in his time [query date]," looked like a "spacious mountain." The walls of Babylon and that of China are curiously cited as cases in point; and then comes the "modern instance" in the shape of the Pantheon, and the startling question why the Classic and the Gothic building of equal size affect one so differently and so entirely to the disadvantage of the latter? Ah! Why? The author is ready with an answer. It is the greatness of the *manner* in the one and the meanness of the *manner* in the other.

If there is one fact better established than another, it is that the effect of size of a Classic building,—St. Peter's, for instance,—is less, *cæteris paribus*,—than that produced by a Gothic structure, and requires a sort of exercise of mental arithmetic to bring home to the spectators its enormous dimensions. But let that pass, and let us quote the learned French author's receipt for grandeur in building:—

"To introduce into architecture the grandeur of manner, the division of *the order* [it is taken for granted that architecture is a thing of "*orders*"] must be bold, and of an ample relievo, and swelling; for example, in a cornice, if the *gola* or *cymatium* of the corona, the coping [now we are getting learned], the modillions or dentili, make a noble show by their *graceful* projections,—if we see none of that confusion which is the result of those little cavities, *quarter rounds* of the *astringal*, and other intermingled particulars which produce no effect," &c. Oh, Joseph! Joseph!

Hear him once more, the dear, delightful, shameless impostor that he is:—"Among all the *figures* in architecture, there are none that have a greater *air* than the *concave* and the *convex*." And then he gives his "exquisite reason" for all this, which, if not quite clear and convincing, is certainly a reason exquisitely given. He forbears to descant on the other qualities of the art which pleasurably affect the imagination, and closing his charming if somewhat discursive and bewildering exposition of his theories by observing that it is not his purpose to observe in detail further than this, that there is nothing in the whole art which pleases the mind unless it is "great, uncommon, or beautiful." Most true! "And so I hold it best that we shake hands and part."

In taking our leave of the writers of this age, we see them firmly impressed with the triviality and *meanness* of Gothic art, in which, says the *Tatler* in his pleasant, off-hand way, "The ornaments are *foreign* to the matter," and the incontestable superiority of the pseudo-Classic styles which engaged their unstinted admiration. They would have been surprised to hear the sentiments on that subject which were possessed by the fine gentlemen and *literati* whom we have in reserve, and who will make their bow to our readers on the next rising of the curtain.

AMERICA'S STAND-POINT WITH REFERENCE TO THE FINE ARTS.

BY W. CAVE THOMAS.

THE Great Nation of the West appears to an artist of the Old Country, and one who has earnestly studied the theory and policy of the Fine Arts, to stand in a most enviable position with respect to the successful pursuit of painting, sculpture, and architecture, for the public of the United States have not as yet irrevocably committed themselves to any art-fashion,—they are still free to determine the goal towards which the artistic genius of the States shall direct its energies. Let the American public appreciate this enviable position,—let them well consider whither they shall speed before they commit themselves to any decided action,—let them, calmly and unbiassed, survey the art of the past,—and then ask themselves, "What epochs in the history of the human race have been epochs of the most consummate manifestations of art; and what national art developments most deserve admiration and study?" Well-read as the Americans are, they will not pause long for a reply; their ready answer will be, "The Fine Arts of Greece and of Mediæval Italy." There have, of course, been many fine art developments of various degrees of merit; there is art and art; but the fine arts of any other than of those two great art epochs are of a lower grade, and less worthy of being admired and imitated. It is clear, therefore, that Grecian and Italian art are *par excellence* the great examples, which a sensible people would steadfastly keep in view, and encourage their talented sons to emulate.

Let the public of the United States well consider, too, how that consummate excellence was attained; let them inquire whether it can be gathered from history that art was promoted by anything like that tall talk which is now so fashionable on art topics, or by anything at all resembling the organisation which has been adopted in Europe professedly for its promotion. And they will have to confess, I think, it was not. No! Art was, in the great art epochs, like everything else that has been of lasting value to the world,—the outcome of common-sense proceeding. Half-educated persons are apt to attribute genius to those who display, either in their artistic or literary work, the greatest amount of eccentricity, and are inclined to hail, as apostles of truth and high priests of art, the men who uphold such work, with perhaps still more erratic commentaries of their own. Unintelligent and rhapsodical criticism is the veriest bane of modern art.

The faculty of reason, in the great times, was

esteemed the divine faculty. This would appear not to be the opinion of our day. The divinity of genius is now attributed, both in literature and in art, to the producers of the most unreasonable and inconsistent works. As if that can possibly have the attribution of divine, which is devoid of all traces of law and order, of reason. Therefore, if hyperbole be now and then permissible, and a poet venture to speak of "snatching a grace beyond the reach of art," that grace must be due not to any deficiency of reason in the genius who snatches it, but to some superior intelligence and reasonableness. Think to what an abject state criticism has descended, when it maintains that art-excellence is in the ratio of its inconsistency. The Greeks appear to have taken art as so reasonable and commonsense a pursuit that their great masters do not appear to have manifested the least anxiety to sign their works. Not one of those marvellously fine productions that crowned the Parthenon has the name of Phidias inscribed upon it, showing that this great sculptor was conscious that Nature ne'er lends one scruple of her excellence, but claims both thanks and use. Whereas every slab of a frieze in these days would have its maker's name conspicuously and deeply incised.

Having elected Grecian and Italian art, as the arts most worthy to be emulated, and found that their excellences could not be due to unreasonableness, let us see whether we can express in words wherein the higher art, in literature, painting, and sculpture, consists. Certainly it does not consist in either of these arts being devoid of, but, on the contrary, in its being instinct with, intellect; and thus we perceive that the finest art was not contemporary with the infancy, but the manhood, of a nation; that in Greece and in Italy the best art was not spontaneously produced, but only by degrees, by progressive development, art progressing as intellect and civilisation progressed. It is the evidence of the presence of a greater amount of intellect in Grecian and in Italian art that gives them supremacy. In referring to history, for instruction on these points, we also come to perceive that art is the *flower* of civilisation, and not the root and cause of it, as is commonly and most erroneously supposed. There is no instance of the greatest painters and sculptors heralding a civilisation.

The modern and ridiculous notion that art is the cause of civilisation induces many persons to fill their dwellings with *bric-à-brac* and all kinds of *rococo* productions, in order to show their friends and acquaintances that they must necessarily be tasteful and civilised by living in the immediate presence of such varied art surroundings, but in nine cases out of ten not one of those surroundings has the slightest pretensions to be considered a specimen of sterling art. There may be puerile Chinese and Japanese productions in profusion, exhibiting here and there a trace of the true art instinct, but oftener you shall find those *objets d'art* nothing but the realisations of the hideous nightmares of the awakening intellect of semi-barbarious peoples. You shall find in those surroundings, too, a host of oddities in the way of furniture, and Louis XIV. glass frames bedizened with tortuous ornament, every single piece of which betrays a laxity and demoralisation consonant with the times that produced it. All this forms a sad spectacle to the man of true taste, who, instead of being impressed with the civilised and æsthetic culture of the possessors of such collections of rubbish, is rather reminded of the barbaric bead and feather decorations of the savage. The man of judgment knows full well that the foundations of true taste inhere in simplicity, in order, in proportion,—in short, in moderation. The man of taste does not crowd the walls of his rooms with bits and scraps of oil and water-colour paintings, encumbered with hideous frames of various patterns having not the slightest connecting link, the least congruity. If he be fortunate enough to possess either a fine picture or a fine statue he will accord it a place of honour in the midst of a calm, blank space of wall, a feature of which the Italian decorators so well knew the value. The furniture, hangings, &c., in the house of taste will be simple; they will not be overlaid, bedizened with excess of colour and of ornament, as is so much the fashion in Europe. The man of taste likes to feel that he has elbow-room and space to breathe freely in, in his dwelling apartments; he does not desire to be in danger, if he move, of breaking some insignificant cup and saucer, whose only claims to respect are that they have been purchased at some fabulous price, and that they were baked in the ovens of some famous old pottery. He has none of the morbidity and fussiness of your latter-day æsthetic. He is not to be taken in by your rhapsodical talkers, who herald in some underdone genius as if he were entrusted with some new art revelation. The man of judgment knows that the acme of painting and of sculpture has been reached, and that the best art of the future must travel on precisely the same lines as the greatest art of the past.

With reference to art in the house (one of the subjects), it is the professed object of this journal to discuss, the writer concurs with the editorial directorate in giving precedence to the consideration of the topics of warming, lighting, ventilation,—in short, to all sanitary considerations; for, without the best conditions are fulfilled in those respects, a house embellished with art is but a gilded sepulchre. But all wholesome conditions being fulfilled, the art in a house should be an integral part of its design, and hold an appointed and important position, as in ancient Greece and Mediæval Italy. Art, indeed, was in the greatest epochs almost entirely associated with decoration. All buildings were then designed to be crowned with painting and sculpture. The Parthenon itself was designed to be the house of Minerva and to be the "setting" of the Phidian jewels. To Phidias himself was entrusted the supervision of the whole, the control of all the *tektones*, from the architect to the tapestry-workers. Art, in detached easel pictures and in bits of sculpture, not designed for any place in particular, is of comparatively recent origin, dating, in fact, from the decadence of the great epoch of Italian art, from the decline of mural painting and architectonic sculpture. If, then, the modern *virtuoso* desire to gratify his taste for easel pictures, &c., let him have either a room or a gallery expressly designed and built for their exhibition, in order that their allocation may not interfere with the symmetry of the decorations of the dwelling-apartments. The advice of Polonius to Laertes, with reference to dress, may, with slight verbal alterations, be applied to the outermost dress of the man,—the house that he dwells in:—

> "Costly thy dwelling as thy purse can spare,
> But not express'd in fancy; rich, not gaudy;
> For the surroundings oft proclaim the man,
> And they in France of the best rank and station
> Are most select and liberal in that."

Let the maxim of your manufacturers be' before all else, perfect adaptation to purpose. That is the maxim which will gain the markets of the world. To lead your producers to suppose that the overlaying of everything with ornament is the true aim, would only be to corrupt and deteriorate the principle of good design and workmanship, and lead to meretricious and unprofitable emblazonment.

In the old countries there is much in the people's surroundings to enchain and bias the judgment in respect to art. There are associations, for instance, connected with the Gothic style to prejudice men's taste in its favour, and even to that extent that they are unable to separate what is intrinsic in it from what is puerile and transient; they will not attempt to extract its principle and work upon that, but insist on imitating all its eccentricities. Gothic, like Egyptian, art, was an *arrested* development; it came, incomplete as it was, to an untimely end with the imperfect religious and political institutions with which it was associated and which had, in a great measure, moulded it. A correlation or parallelism will be found to exist between all the different stages of art development, whenever and wherever they may occur. A strong resemblance may be observed in all early art, whether it be Egyptian, Greek, Italian, Gothic, Chinese, or Japanese. The art of a nation is always the faithful reflex of its intellectual status, and in Egyptian art we discern at once indications of the arrested development of the intellect of the people, caused by the persistent opposition of a dominant and priestly caste to freedom of thought and of action. It is the fashion to extol Egyptian civilisation and Egyptian art, and to exaggerate the indebtedness of Grecian philosophy and Grecian art to Egypt. Why! Greece in a few centuries had overtaken Egypt in intelligence and had passed on to that fulness of attainment which the Egyptian civilisation, which had lasted for as many thousands of years, never approximately reached!

Put no faith in *impromptu* geniuses. Even the most highly endowed artists only attained to their greatness by dint of indefatigable industry and a long course of training. Girls and boys may be able, in a certain sense, to paint and to model after attending an art-school for a twelvemonth or two, but the thorough artist cannot be made at that rapid rate. Let America, above all things, believe in, and encourage her own sons to pursue, that higher kind of art, which has been recognised by the highest order of minds in all lands. Let the public edifices be handed over to talented American artists as fields for the exercise of their genius on historical painting, and let them be liberally paid. Let the States leave to their painters and sculptors the foundation of their art-schools and the art-education of the people, as the Greeks and the Italians did. Do not commit the folly of squandering public money on national galleries of old masters in the hope of encouraging art and forming taste. These were not the means adopted in the great art times. The true way was always to make a continuous demand upon the exercise of native talent. Let your national galleries consist of the works of your own painters and sculptors. And then it may be predicted that in less than half a century the American School of Art will be to the front.

THE THREATENED STRIKE IN THE COAL TRADE.

AGAIN we hear the note of warning sounded of an impending strike in the coal trade, and in view of the probable consequence of this system of burning down the house to get roast pig, we may draw attention to one possible result of any attempt to force up the price of coal by strikes which has probably not yet occurred to those immediately interested in the subject. As long as we *must* have coal for all purposes of fuel, it may seem the best policy to combine for putting the highest price on the labour of procuring it; but what if the idea of extensively available substitute for coal should be started?

The last number of the *Edinburgh Review* gives an account of the enormous petroleum district, covering some 1,200 square miles of territory, which lies to the west of the Caspian Sea; and since then the *Morning Post* has published a series of letters, dated from Baku, in the Caspian, and from Batoum, on the Black Sea, which add, indeed, but little to the facts brought forward in the *Edinburgh*, but which give the graphic picture of a veritable Geyser of mineral oil, springing into the air to a height of 300 ft., and tearing up soil and pebbles in its skyward leap.

The existence of this rich source of mineral wealth in the basin of the Caspian has long been known; and the economic importance of the product was recognised by the astute foresight of Peter the Great. It is, however, only about ten years since that the Russian Government seemed to wake up to the immense national importance of this supply, and that steps have been taken which have led to a rapid development of the industry, rather in American than in Russian fashion. The point that we have to urge, as affecting the colliers, is the nature and value of the refuse left when the petroleum is distilled for commerce.

This refuse, which is called by the Russians ASTATKI, is a treacly fluid of high calorific power. It is said to be from three to four times the calorific value of coal, for equal weights, according to Russian calculations. Petroleum, in its crude state, has only about half as much again of calorific value as coal; so that we may here perhaps suspect an over-statement. On the other hand, the mode in which the refuse is burned under a steam-engine boiler allows of so direct an application of the great heat liberated, as to render such a prodigious economy as three to one by no means incredible. What is, therefore, thus indicated as possible, is the production, almost *gratis* (for the refuse is now in part thrown away), of a fuel of three times the value of coal, weight for weight.

The production, however, of such a fuel on the shores of the Caspian may be thought to have but little direct interest for the English collier. It is true that the steamers on the Caspian, and on the great Russian rivers and canals that communicate with its waters, are now fired with *astatki*; and so are the locomotives on the new Trans-Caucasian and Trans-

Caspian railways. But as neither Newcastle nor Cardiff can export to the Caspian, we may be met by the proverb that "it is a far cry to Lochow." Very true, if that were all. But the able and energetic men who have succeeded, since 1872, in driving American petroleum from the Russian market, by the cheaper supplies attainable from the Caspian basin, are as well aware of the nature of the Mediterranean commerce as are any of our own most enterprising merchants. A railway exists from Baku, the present metropolis of the petroleum district, to the Russian port of Batoum on the Black Sea, and in March last kerosine, the refined product of petroleum, was sold in Baku at a penny a gallon. The carriage to Batoum about doubles the price. But it is in contemplation to lay pipes along the course of this railway, through which the crude oil shall be forced, without any further process of handling, as it springs from the soil. And if this is accomplished the cost of transport for the 560 miles will be reduced to a very small fraction. Refineries are already erected, or in course of erection, at Batoum; and on the completion of the pipe, which is far from being an impossible, an unlikely, or even perhaps a long-deferred, contingency, the production of the costless *astatki* on the shores of the Euxine, within easy reach of the Mediterranean, will be an accomplished fact. And as to probability it should be added that the oil is already sent through sixty miles of pipe from the various wells to Baku.

How might this fact, when accomplished, affect Newcastle? How might it affect Cardiff? Even supposing a brisk demand to raise the price of the *astatki* to a figure that would add enormously to the profits of the refiners, we cannot estimate it at more than one-third the price of coal, free on board. And then, if the foregoing estimate be correct, the freight will be only from one-third to one-fourth the freight of that of coal, exclusive of any difference that may be due to questions of back-carriage. *Astatki*, in that case, could be sold in the Tyne or on the Welsh rivers at one-third of the price at which English coal could be sold at Batoum. How would this affect Aden, Port Said, Gibraltar, Marseilles, all the Mediterranean, the Indian, the Australian ports? Guarding ourselves against vouching for the accuracy of the statements now brought so authoritatively before the public, we only say, if these things be so, what may be the effect on our coal export trade a few years hence?

Our coal export trade touches at present on the amount of twenty millions of tons per annum. It must feed the industry of at least from 60,000 to 80,000 colliers. Will it be nothing to have so large a proportion of our great underground army thrown out of work? Nor is that all. Coal, coke, cinders, and artificial fuel now form about two-thirds of our entire export tonnage. If we suppose that export to be knocked on the head, we shall only require some ten millions of tons of shipping to carry all the produce that we export from the United Kingdom, out of thirty millions of clearance tonnage. The effect of such a disturbance of the course of trade would be (as an arithmetical matter) to raise the price paid for freight on our imports by something like 50 per cent.

The immediate bearing of the information of which we have indicated the sources on the future of the English coal trade is evident. The question lately in debate between masters and men was that of a proposed rise of 15 per cent. in the wages of the latter. This is about equal to 6d. per day, the present wages being rated at from 23s. 6d. to 24s. per week on the average, and the wages claimed being from 27s. to 28s. 6d. per week. It cannot be said that these are high wages, considering the extreme risk, toil, and discomfort of the task of the miner. But, unfortunately, we are not in a position to determine the rate of wages on considerations like these. Do what we may, or what any one may, in the present state of civilisation, wages have an inevitable tendency to settle themselves. The adjustment may be deferred by disputes, but it is clear that a maximum limit is put upon the rise of wages by the competition of the market. We have not at hand the statement of the coal yield of 1882, but that of 1881 was at the rate of 311 tons of coal raised in the course of the year for each workman returned as employed. Wages were, we apprehend, then 10 per cent. lower than at present, as, not so very long ago, there was a rise to that extent. Taking these figures, which are furnished by, or, at all events, calculated from the Government returns, every ton of coal raised in 1881 cost 4s. for labour alone, exclusive of interest of money, cost of machinery, royalty, and all expenses except wages. If the same rate of yield per man was maintained in 1882 as in 1881 (and there was a diminution in this respect from 1871 to 1881), each ton of coal will have cost 4s. 7d. for wages alone. If this be so,—and to check the calculation we only require the yield of coal in the year, the number of men employed, and the average rate of wages,—it may be very questionable whether the trade can stand a rise in wages to the rate of 5s. 3d. per ton. What is needed for the positive and absolute decision of the question is a statement of the actual sale price of coal at the pits' mouth, or before any cost of transport has been added to the cost of production. The Statistical Abstract for the United Kingdom for 1881 values the 154,184,300 tons of coal raised in that year at 65,528,327*l.*; figures which show both the largest quantity yet raised and the highest price per ton yet attained, being the same as that for 1880.

In 1870 the highest rate of efficiency on record was attained by the colliery workmen, the yield of that year having reached the maximum of 321 tons per man. The value of coal at the place of production was estimated in the Statistical Abstract for 1870 at 5s. per ton. With the general rise in prices that occurred from 1870 to 1874, the price of coal rose (valued as before) from 5s. to 7s. 4d. per ton. The corresponding rise of wages it is less easy to ascertain, but the rise of nearly 50 per cent. in the price of coal was accompanied by a falling off of 22½ per cent. in efficiency of labour, each miner in 1874 only winning an average of 249 tons of coal.

Thus there are three or four of the elements needed for the solution of the question easily attainable; and the main thing which is required for an authoritative opinion as to the justice or otherwise of the claims of the colliers, is a statement of the average wages earned by them for each year since 1867, such wages being collated with the cost of living in each year. These things are attainable, probably by Government, certainly by the coal owners; and, if we could now command them, we should be able to put the question in a nutshell.

As it is, we have the fact that the present demand would require, for wages alone, 3d. per ton more than the whole selling price put on the coal at the place of production in 1870. On the other side of the question is the fact that the selling value in 1881 was 66 per cent. higher than that in 1870, and the efficiency of the miners, or yield per man, was only 3 per cent. less in the latter than in the former years. As far as this comparison goes,—and its significance can hardly be denied,—it looks as if the men had not participated to a due extent in so great a rise of price. It is within the competence of the miners themselves, or of their advisers, to clear up the point, and that, it will be seen, without reference to the accounts kept by the masters. The "Statistical Abstract" may give approximate prices only, but, running over the period from 1867 to the present time, they cannot be far from the truth. Our reading of the import of the record of the annual yield per man is, that as wages fall the miner exerts himself,—by piece-work or in some other way,—to diminish his loss of income by longer and harder work. On the other hand, with the increased wages of 1874 the men took it more easily. We are the last to blame them for so doing. But the warmer our sympathy, and the more definite our knowledge, so far as it goes, the more desirable is it to have the missing link filled in. Given that, given the rate of wages in each year, compared with the worth or purchasing power of wages, and we have the elements of an equation, the use of which would at once remove the decision of the proper wages of the colliers from the ground of debate to that of scientific proportion. It is in the power of either party to supply the information that we require. Which will be the first to do so?

Messrs. H. & J. Cooper, of Great Pulteney-street, Golden-square, specialists in furniture and decoration, have just had the honour of receiving at the hands of Lord Colville of Culross, a warrant of appointment to Her Royal Highness the Princess of Wales.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the fifth ordinary (business) meeting of the session, held on Monday evening January 7, Mr. Horace Jones, president in the chair, with fifteen member of council, sixty fellows, and thirty-six associates, the minutes of the ordinary meeting, held December 17, were read and signed as correct.

The decease of Jean Baptiste Cicéron Lesueur, hon. and corr. member (royal gold medallist), and of Marie-Antoine Chenavard, hon. and corr. member, was announced, and the communications in regard to them were read: that on M. Lesueur repeating in brief the main facts already given in a communication from a French corresponding member of the Institute in our columns (page 5, *ante*), which was especially referred to. In regard to M. Chenavard, the secretary read a letter received from M. Charles Lucas, Hon. and Corresponding Member, stating that the deceased, described as the "*vénéré doyen des architectes français*," was born at Lyon on the 4th of March, 1787, so that he had almost reached the age of ninety-seven years. He wrote a letter only last October, in which he expressed the pleasure he felt in the work of his British colleagues, referring to the volume of "Transactions" he had just then received. He had been a student of the École des Beaux Arts, and had travelled in Italy. In 1827 he was appointed professor of architecture in the school of his native town of Lyon, and held the post for thirty-three years. In 1843 he visited Egypt and Greece, and during a year's travel made a large number of measured drawings of ancient buildings in both those countries. A speech delivered at the funeral by M. Bellemain gave an interesting account of Chenavard's career, from which it appeared that he was the founder, in 1830, of the Société Académique d'Architecture at Lyon, and its honorary president during the whole of his life. He was the author of several works, namely—"Voyage en Grèce et dans le Levant," text, 8vo., Lyon, 1849, and plates, fo., Lyon, 1858; "Fontaines Esquisses," ob. fo. Lyon, 1864; "Sujets tirés des Poëms d'Ossian," ob., fo., Lyon, 1868; "Les Poëtes," ob., fo., Lyon, 1874; "Théâtres antiques: leur Grandeur comparée," 8vo., Lyon, 1880; and these he presented to us at various times.

Several donations to the library were announced; and the secretary read a letter from M. Questel, the president of the Société Centrale des Architectes, acknowledging the last volume of the "Transactions," and speaking of the interest which he had found in them, especially in regard to the illustrated paper on the architecture of Cyprus. The volume had also been reviewed by Dr. Reichensperger, of Cologne, in a contribution to the *Literarische Rundschau*, a well-known Catholic journal, published at Würtzburg. Herr Ende, of Berlin, a recently-elected hon. corresponding member, had sent through Mr. MacLachlan the plans of several new buildings in Germany; and the institute had been indebted for a number of little kindnesses shown and services rendered to British students of architecture and other winners of those Institute prizes which enabled them to make a continental tour for purposes of study. This last year the holder of the Godwin Bursary, who selected North Germany for his tour, was assisted in every possible way by Herr Ende, who invited him to his house and made much of him during his stay in Berlin. Dr. Schliemann had presented his new work on Troy, and a recent photograph of the Academy of Sciences at Athens, the work of Ritter von Hansen, of Vienna, and of another architect, had been received from Mr. Arthur Cates. The correspondence all through the past year with M. Charles Lucas (Paris) had not only been constant, but of the utmost value to those who had to transact the business of this Institute. He had translated the "Suggestions for the Conduct of Architectural Competitions," and the translation had been printed in the *Compte Rendu*, just published, of the last Congress of French architects. Referring to the now extensive foreign correspondence of the Institute, the Secretary read the following letter from Mr. John H. Sturgis, Vice-President of the Society of Architects of Boston, U.S.A.:—

"Dear Sir,—Herewith I send you a copy of the First Series of the 'Sketch Book of the Architectural Association of Boston,' and would beg you to allow me the honour of presenting it to the Institute. It is a reproduction of the sketches of members of

the Association, junior to the Society of Architects, composed principally of young men not practising on their own account, but employed in architects' offices. Some of them since the book was issued have 'hung out their own shingle,' to use an Americanism. The Association has no actual connexion with the Institute, or with any chapter, but is a society *per se*. It has a monthly meeting, when sketches are exhibited, being generally a *projet*, and then they ask one of the well-known members of the Boston Society of Architects to come and criticise and give the awards of merit, or rather, I should say that the members of the Association vote the awards after listening to the careful criticisms of their senior, and usually according to the tenor of his remarks, although they are not bound by them. Let me say, in a few words, that we have a parent society in America with its *locus* in New York, called the American Institute of Architects, composed of Fellows and Associates or Junior Members. These Fellows and Associates live in all the different States of the Union, and are practising architects belonging to local 'Chapters,' each chapter having its separate organisation, with its own officers. The Presidents of the various Chapters are Vice-Presidents of the Institute. The Chapters generally meet once a month; the Institute has stated meetings for elections, &c. A convention of all the Chapters is held once a year in some city where there is a Chapter, and is presided over by the officers of the Institute,—here officers for the ensuing year are chosen, papers are read, &c., and discussions are held. There are Chapters in all the principal cities—New York, Philadelphia, Washington, Baltimore, Chicago, Cincinnati, Boston, &c. My few words have extended too far already. Pray accept my thanks for the copy of the Transactions, which I shall have much pleasure in presenting to the Boston Society of Architects.—Very truly yours,

JOHN H. STURGIS,
Fellow of the American Institute of Architects."

The usual vote of thanks having been voted to the various donors,

The Hon. Secretary also announced that the Council had that day examined and approved the work of William Alfred Pite, the Pugin Travelling Student for 1883, and that the full amount of 50*l.* had been awarded to him. The Hon. Secretary referred to Mr. Pite's numerous sketches and measured drawings, and read a letter from Mr. Pite, with some particulars of his work in Oxfordshire, the ground he had selected for sketching.

The Hon. Secretary also announced that the Council were considering a scheme for presenting the Pugin Travelling Student with a Medal (as well as the sum of 50*l.*) to be called the Pugin Medal, it being felt that the students would be gratified in obtaining a more enduring memorial of their labour than the mere money which to them perished in the using.

The Hon. Secretary then announced that the Council had appointed, for the purpose of carrying out the arrangements for the General Conference of Architects to be held in London in May next, a Special Committee, consisting principally of the Presidents of Societies of Architects in the various provincial centres, who had all consented to act, namely:—

Edinburgh Architectural Association, Mr. David MacGibbon.
Glasgow Institute of Architects, Mr. James Thomson, Fellow.
Glasgow Society of Architects, Mr. James Sellars.
Royal Institute of Architects of Ireland, Mr. J. J. McCurdy.
Berks Archæological and Architectural Society, Mr. James Rutland.
Birmingham Architectural Association, Mr. John J. Bateman.
Leeds and Yorkshire Architectural Society, Mr. Edward Birchall, Fellow.
Leicester and Leicestershire Society of Architects, Mr. R. J. Goodacre, Fellow.
Manchester Society of Architects, Mr. John Holden, Fellow.
Northern Architectural Association, Mr. Frank W. Rich.
Nottingham Architectural Association, Mr. Fothergill Watson.
York Architectural Association, Mr. Walter G. Penty.

With the following Metropolitan representatives, namely:—

Royal Institute of British Architects,—John Whichcord, F.S.A., Past President; James Fergusson, D.C.L., F.R.S., Past Vice-President; Arthur W. Blomfield, M.A., F.S.A., Member of Council; Thomas Blashill, Fellow; Edward A. Gruning, Fellow; J. Douglass Mathews, Fellow; and R. Phené Spiers, F.S.A., Fellow.
Architectural Association, Cole A. Adams, Fellow.

The following gentlemen were balloted for and declared to be duly elected:—

AS FELLOWS.

Thomas Turnbull, Wellington, New Zealand.
Thomas Elworthy, St. Leonard's-on-Sea.
Harry Siddon Greaves, Associate, Cape Town.
Harold Ainsworth Peto, Associate, 11, Argyll street, Regent-street, London.
Ernest Henry Bayer, Adelaide, Australia.
John Dunn, Associate, 1, John-street, St. James's-square, London.

AS ASSOCIATES.

Joseph Henry Ball (Exam. 1883), Chigwell.
Thomas Bostock Whinney (Exam. 1882), London.

AS HONORARY ASSOCIATE.

Frederick William Yeates, London.

Mr. H. Langston then put a question of which he had given notice, as to why the proceedings at the meetings were not more fully reported, and cited one or two cases. After some discussion, in which Mr. W. Woodward, Mr. Phené Spiers, Mr. Arthur Cates, and other members took part, it was understood as admitted that there were some grounds for bringing up the question, and that the executive officers would in future carry out what seemed to be the general desire of the members.

Another question, of which notice had been given, referred to the Eastbourne Improvement Act, 1879, wherein it was set down that "Every candidate for the office of building surveyor shall be of the full age of twenty-five years, properly skilled and educated in the art and practice of building, and shall hold a certificate of the Royal Institute of British Architects . . . . that he has been examined and is competent for such office;" and to the fact that the Board of Examiners, appointed by the Institute, under the 33rd section of the Metropolitan Building Act, 1855, declined to examine a candidate unless he made a bonâ-fide statement that he intended to apply for a district surveyorship in London. The question put by Mr. Lacy W. Ridge was, "Whether that bonâ-fide statement formed part of the statute establishing the examination?" The answer given by the President was, that in his opinion it did not form a part.

Mr. Ridge thought that the statement now required from candidates applying to be examined virtually rendered abortive the intention of the Legislature, as shown in the Eastbourne Improvement Act, 1879, and he was of opinion that the time had come when the District Surveyors' Examination might be made applicable to any similar appointment throughout the country. He would, therefore, propose that it be referred to the Council to consider wkether the "statement" could not be so modified as to make the examination applicable throughout the country, and so carry out the intention of the legislature in the Eastbourne Improvement Act, 1879.

The President accepted on his own part and on that of the Council the desire expressed by Mr. Ridge, and hoped soon to see as many candidates at the district surveyors' examinations as might choose to present themselves.

Mr. Charles Fowler doubted whether the Board appointed by the Institute had sufficient powers to examine any except those qualifying for the office of district surveyor under the Act of Parliament. Further instructions were necessary from the Council before the Board could take action in the matter, and it would, in his opinion, be desirable to wait until the next appointment of the Board in May, for possibly some members of the present Board might object to examine in subjects beyond the sphere of district surveyors in London. For instance, drainage would have to be included in any general examination applicable throughout the country.

After a few remarks from Mr. Henry Dawson and the President, the Secretary read the thirty-third section of the Metropolitan Building Act, 1855.

Mr. Edward I'Anson seconded the motion, and it was resolved "That it be referred to the Council to consider whether the statement (that the candidate intends to apply for a district surveyorship in London) could not be so modified as to make the examination applicable throughout the country, and so carry out the intention of the Legislature in the Eastbourne Improvement Act, 1879.

THE ELECTION OF THE COUNCIL.

The motion, in two parts, of which notice had been given, in reference to the election of the Council, proposed by Mr. Ridge, and seconded by Mr. William White, F.S.A., having been discussed by Messrs. Wyatt, C. Barry, R. W. Edis, Prof. Kerr, J. Jennings, H. Dawson, R. Phené Spiers, Alex. Payne, and Ralph Nevill, it was resolved, "That (1) in the opinion of this meeting it is desirable that some alteration in the composition of the Council should be made at each annual election; (2) that it be referred to the Council to consider what alterations in the By-laws are necessary to carry out the above resolution."

The proceedings of the business meeting being at an end, and the President having asked whether, at that advanced hour (ten p.m.), the members would hold the special general meeting summoned to take place at the close of the business meeting, the adjournment of the meeting was moved by Professor Kerr, and seconded by Mr. Wyatt, Fellow. The motion was put to the meeting and lost, and the President formally declared the business meeting terminated.

The special general meeting, of which notice had been given, was then held, to consider a proposed alteration in By-laws XXVI. and XXVII. The notice convening the meeting having been read, the Hon. Secretary stated that the meeting had been summoned in pursuance of the intention announced by the President in his opening address of this session, to propose the substitution of new By-laws in place of By-laws XXVI. and XXVII. now in force, and that the propositions were made on the part of the Council, namely:—

To substitute for the By-law XXVI., actually in force, the following:—

"Any Fellow or Hon. Fellow shall be eligible to be nominated by the Council as President, but no Member who has filled the office for two successive years shall be again eligible for the Presidency until the expiration of two years from the termination of his tenure of office."

To substitute for the By-law XXVII., actually in force, the following:—

"Any Fellow who is or has been a Member of Council shall be eligible to be nominated by the Council as Vice-President, but no Vice-President who has filled the office for six successive years shall be eligible for re-election as Vice-President until the expiration of twelve months from the termination of his tenure of office."

It was moved by Mr. Edis, and seconded by Mr. Christian, "That, in place of By-law XXVI. actually in force, the words proposed by the Council be substituted."

An amendment, moved by Mr. Henry Dawson, and seconded by Mr. Jennings, to leave out the words "or Hon. Fellow," having been put to the meeting, was carried.

The original motion as amended having been put to the meeting, was carried *nem. con.*

With reference to By-law XXVII., it was moved by Mr. Edis, and seconded by Mr. R Phené Spiers, "That, in place of By-law XXVII. actually in force, the words proposed by the Council be substituted." The motion, having been put to the meeting, was carried *nem. con.* The meeting then adjourned.

INDIAN ENGINEERING.*

In these papers, irrigation and the conservation of water,—subjects of paramount importance in a country like India,—occupy, as they should do, the chief consideration.

An elaborate and interesting account is given by Mr. R. G. Kennady, Exec. Engineer of the Bari Doab Canal of the irrigating *duty* it performs, *i.e.*, the proportion of the useful effect to the loss resulting from various causes, with a view to determining the necessary supply of water required to irrigate a given area. Even in a country like India, it appears that the loss through evaporation in the hottest months bears but a small proportion to the loss through absorption. The former, amounting to about one-eighth of an inch per day, while the latter reaches ten times that amount. The total loss from various causes amounts to 72 per cent. of the water pumped into the canal, so that the duty performed is only 28 per cent. It seems probable from the remarks of Mr. T. Higham, Sup. Engineer, and others, that, with care and management, a saving of another 16 per cent. might possibly be effected; even then the loss would appear excessive.

We have also an interesting account by Mr. F. L. Dibble, M.I.C.E., of an ingenious

* Edited by Lieutenant-Col. A. M. Brandreth, R.E. Principal of the Thomason Civil Engineering College, Roorkee. Sept., 1883.

staging employed by him during the recent Afghan war, on the Jhelum and Rawalpindi section of the Punjab Northern State Railway, to enable the girders to be laid across the piers of the larger bridges with the greatest rapidity.

Framed trestles were formed of timber about 73 ft. long, 8 ft. wide at the top, and 20 ft. at the base.

The feet of these trestles were let into sockets cut in the piers at the water-level, and they were easily hoisted into position. After use at one span, they were floated to the next with great facility. The system seems very simple, effective, and economical, and could be employed at home.

We have also by the same author an account of an improvised overhead wire-way, which is suggestive, and might be usefully employed in some of the mining districts of England and Wales.

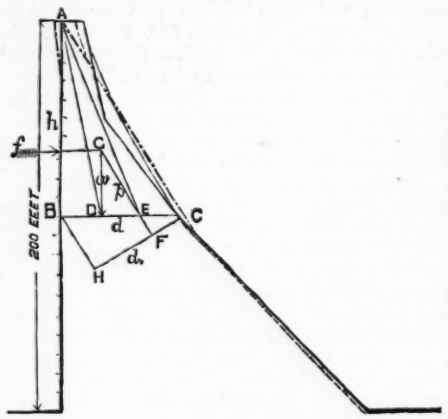
The most interesting and useful contribution to these papers is a note by Mr. G. L. Molesworth, on high masonry dams. It is principally a translation of some observations of M. Bouvier, which appeared in the "Annales des Ponts et Chaussées," vol. x., 5th Series, No. 32, on the well-known investigations of Delocre and Graff. The observations of M. Bouvier will fully repay careful study.

The first idea of a masonry dam is founded on the statical condition that the weight of any part of the superstructure should overbalance the pressure of the water against it. Thus the two faces would be planes meeting in a ridge at the water-level. As, however, the water in the reservoir is liable to rise above the normal level at times of flood, and to be lashed into waves by the wind, but principally because the limit of the strength of the masonry to resist crushing is approached in dams of great height, the simple wedge-shaped section requires considerable modification, especially towards the base.

The above considerations are thoroughly investigated by M. Bouvier. The line of thrust through the masonry of the dam is determined by equating the moment of the water pressure and the moment of the stability of the opposing masonry at successive depths. In estimating the resistance of the masonry to the thrust M. Bouvier shows that the horizontal section does not properly represent the strength there as assumed in the investigations of Delocre and Graff, but that the section should be taken perpendicular to the thrust. The formulæ are very complex, and involve tedious calculation in their application. In order to simplify them and bring the calculations within reasonable limits, Molesworth gives some approximations, for which he very justly claims no mathematical accuracy, as they omit the important factor, the weight of the masonry. They seem, however, to give results closely resembling M. Bouvier's, especially where the specific gravity of the masonry is about 2½, and is capable of sustaining 25,000 lb. per foot sup. Nevertheless, it is very undesirable to make use of formulæ which do not include all the factors, and which would necessarily fail under exceptional conditions. It is true, as Molesworth points out, that if the masonry have an increased weight the resultant pressure passes nearer the centre of the mass, where the masonry is more capable of offering resistance; but it usually happens that an increased weight is accompanied by an increased strength, and it is not necessary that the thrust should pass closer to the centre of the mass. The masonry should, under such circumstances, be reduced in quantity. No doubt the factor of safety 10 will cover a multitude of sins, but, in order to ensure the existence of such a factor in our formulæ, the greatest possible accuracy is desirable. It seems probable from the remarkably close agreement in the sections obtained by the use of Molesworth's and M. Bouvier's formulæ for dams constructed of masonry of various weights, that the weight is involved in Molesworth's formulæ in some obscure form, but, as we are not favoured with his analytical investigations, it is impossible to discover if such is really the case.

M. Bouvier's calculations, in common with most writers of note, are entirely based on the strength of the masonry to resist crushing. Although this is of vital importance in the lower part of the structure, it is not only unnecessary, but it may lead to considerable error in the upper part, because, if the theory of the transmission of thrusts be properly attended to, the strength of the masonry will be far more than sufficient to resist the crushing stress down to about 100 ft. from the summit.

The theory of the transmission of pressure points out that, if the resultant pass within one-third of the diameter from either face, the opposite side will be in tension,—a condition inadmissible in masonry, as it tends to open the joints, and ultimately destroy the stability, and should be especially avoided in dams where an open joint on the inner face would allow the water of the reservoir to enter and exert a considerable lifting force on the masonry. Starting on these principles, the theoretical form to give to the upper part of a dam is a very simple matter. The results obtained differ very considerably from those obtained by M. Bouvier.



Thus let A B C represent the upper part of a masonry dam; draw the lines A D and A E cutting each horizontal line into three equal parts. The centre of gravity of the masonry above any horizontal line is vertically over its point of intersection with A D. The resultant (p), of the pressure of the water (f) acting at one-third the height A B and of the weight of the masonry w acting through D; passes through E.

The proportion of the base B C (d) to A B (h) is determined by the specific gravity of the masonry.

Thus, taking a cubic foot of water as our unit of weight, and supposing the masonry to have a specific gravity $g = 2\frac{1}{2}$, then,—

$$f = \frac{h^2}{2} \qquad w = \frac{g\,d\,h}{2} \qquad p = \sqrt{w^2 + f^2}$$

and from similar triangles A B C, G D E,

$$d = \frac{h\,f}{w} = \frac{h^2}{d\,g} = \frac{h}{\sqrt{g}} = \frac{h}{1{\cdot}58}$$

So, if A B equals 100 ft., B C would equal $\frac{100}{1{\cdot}58} = 63$ ft. when the specific gravity of the masonry is 2·5.

If the specific gravity had been taken at 1½, d would have equalled 82 ft., showing that the weight of the masonry should not be disregarded as in Molesworth's formulæ.

To determine the depth to which the triangular section may be carried before it becomes necessary to take into account the crushing of the masonry, produce G E and draw C F H perpendicular, and B H parallel to it. Then C H (d_1) represents the extent of the masonry offering resistance to the thrust p at the level B C, as pointed out by Mr. Bouvier. And as C F is one-third C H, by the law of transmission of pressures, half the crushing strength of the section C H will be called into play in resisting the pressure p. Suppose the maximum crushing force c allowable on the masonry be 25,000 lb. per square foot, or 416⅔ cubic feet of water. Then,—

$$p = \frac{c\,d}{2} \quad \textit{but } d = \frac{d_1 w}{p}. \quad \textit{Hence we easily obtain}$$

$$h = \frac{c}{g+1} = 119 \textit{ feet.}$$

Therefore, in this particular case the triangular section may be carried down 119 ft. from the summit. Beyond that depth the outer face requires an increased batter. And at the same depth the inner face should also commence to batter, in order that the thrust due to the weight when the reservoir is empty should not pass within one-third the diameter from it. M. Bouvier's theory may be applied correctly in determining the proper form of the lower portion of the structure in which the crushing strength has to be our guide. The full line in the figure shows the outline form of a dam calculated by Molesworth on M. Bouvier's principles. The dotted line shows the corresponding section resulting from his own formulæ, and the chain dot the necessary modification resulting from the application of the principles of transmission. The necessary thickness at the summit may with advantage be given so as to overhang, to some extent.

COTTAGE AND STABLES, HAMPSTEAD.

THIS little building has been recently erected on the Greenhill Estate, Hampstead. It has been designed so as to obtain on a small plot of ground, stabling for four horses, large coach-house, washhouse, and coachman's residence.

The rapid fall of ground from the road has been utilised by placing the stables, harness-room, &c., on basement level, with an inclined way for horses. The coach-house and residence are entered at the roadway level. The latter has two good sitting-rooms, five bedrooms, bath-room, and good offices. The elevation is in a simple Renaissance style, faced with Leicestershire red bricks and tiles.

The architect is Mr. Theodore K. Green, of No. 58, Finsbury-pavement and Hampstead. The builders are Messrs. Bowyer, of Dulwich.

HOSPITAL FOR INFECTIOUS DISEASES, NEWCASTLE-UPON-TYNE.

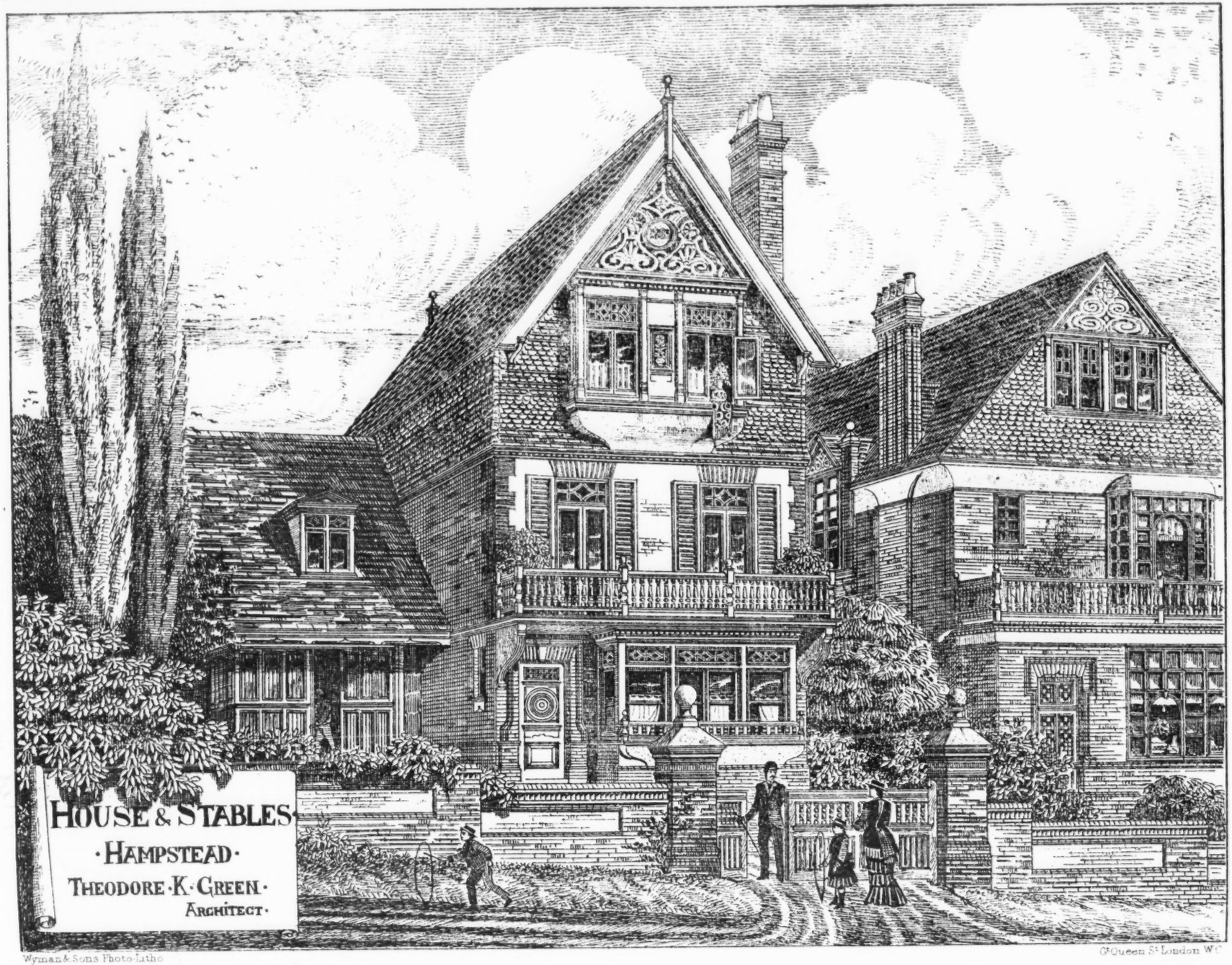
WE illustrate this week Mr. A. B. Gibson's designs placed first in this competition by Mr. Worthington, the architectural assessor retained by the committee to advise them as to the merits of the designs submitted. The instructions of the committee to competing architects were for a hospital, on the pavilion system, for eighty-four beds, divided into six ward blocks. Each ward block to have one large ward for ten patients, one ward for two patients, and two single-bed wards; the nurses' duty-room to be so placed as to have windows (if possible) looking into all the wards. The cost of the building not to exceed 120*l.* per bed.

The site is almost rectangular, and contains about ten acres, allowing ample space for the effectual isolation of the wards. In the design we illustrate, the administrative block is placed centrally on the ground, with the ward blocks, three on each side, connected by ventilated corridors. The ward blocks are all placed north and south on the ground, in order to secure plenty of sunshine, and by this distribution of the wards the prevailing westerly winds blowing between the ward blocks preclude the chance of infection being carried from one portion of the hospital to another. The exterior of the building is of a simple domestic character, and will be executed in red brick.

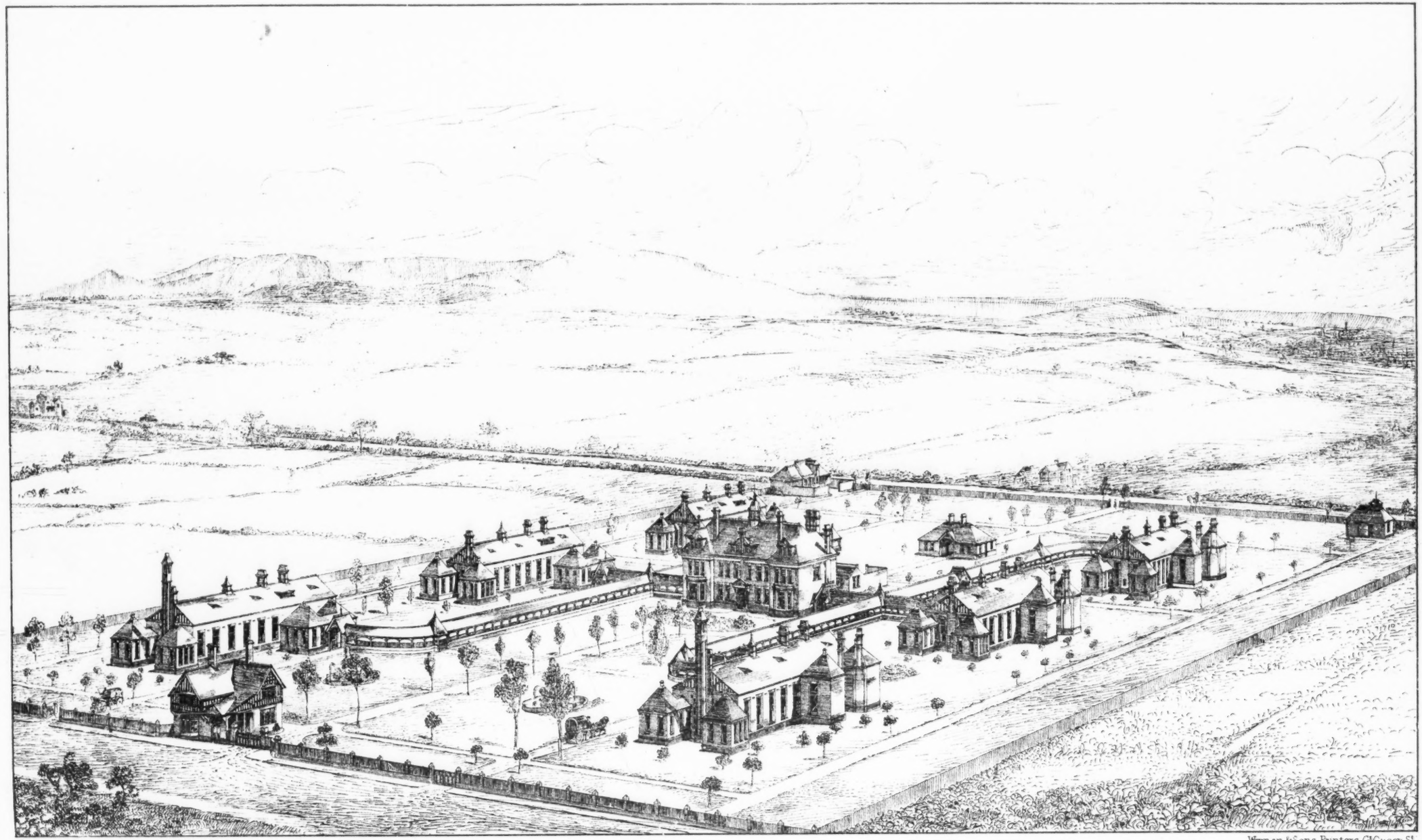
The author of the design, in his report, proposes to employ all the latest improvements in hospital construction. Captain Douglas Galton's ventilating grates have been provided in all the wards, and, in addition, steam is employed for warming air admitted into the wards in cold weather. The vitiated air is extracted from the wards by means of powerful air-pump ventilators, provided with steam coils, to assist their action; the lighting to be by means of Swan's Patent Incandescent lamps. The drainage system has been carefully considered, and plans and details of the drains accompanied the drawing, showing the author's ideas as to ventilation, flushing, disinfection, &c.

Mr. Gibson has received instructions to proceed with the working drawings, and it is expected that tenders for the erection of the building will be obtained early in the spring.

The Annual Supper of the workmen at the Kingsbury Iron Works (Messrs. E. & H. Houghton Brown, proprietors), Kingsbury-road, Ball's-pond, took place on Saturday evening at the Railway Tavern, St. Jude's-street, when about thirty sat down to a capital supper. The chair was occupied by Mr. E. Houghton Brown, who was supported by Mr. B. Allen, Mr. Newman occupying the vice. The toast of "The Firm," was heartily received, and responded to by the Chairman, who expressed regret at the unavoidable absence of his brother, Mr. E. Houghton Brown, who said he hoped next year to see double the number sit down, as such gatherings as these went a long way to cement the good feeling which should always exist between master and workmen.



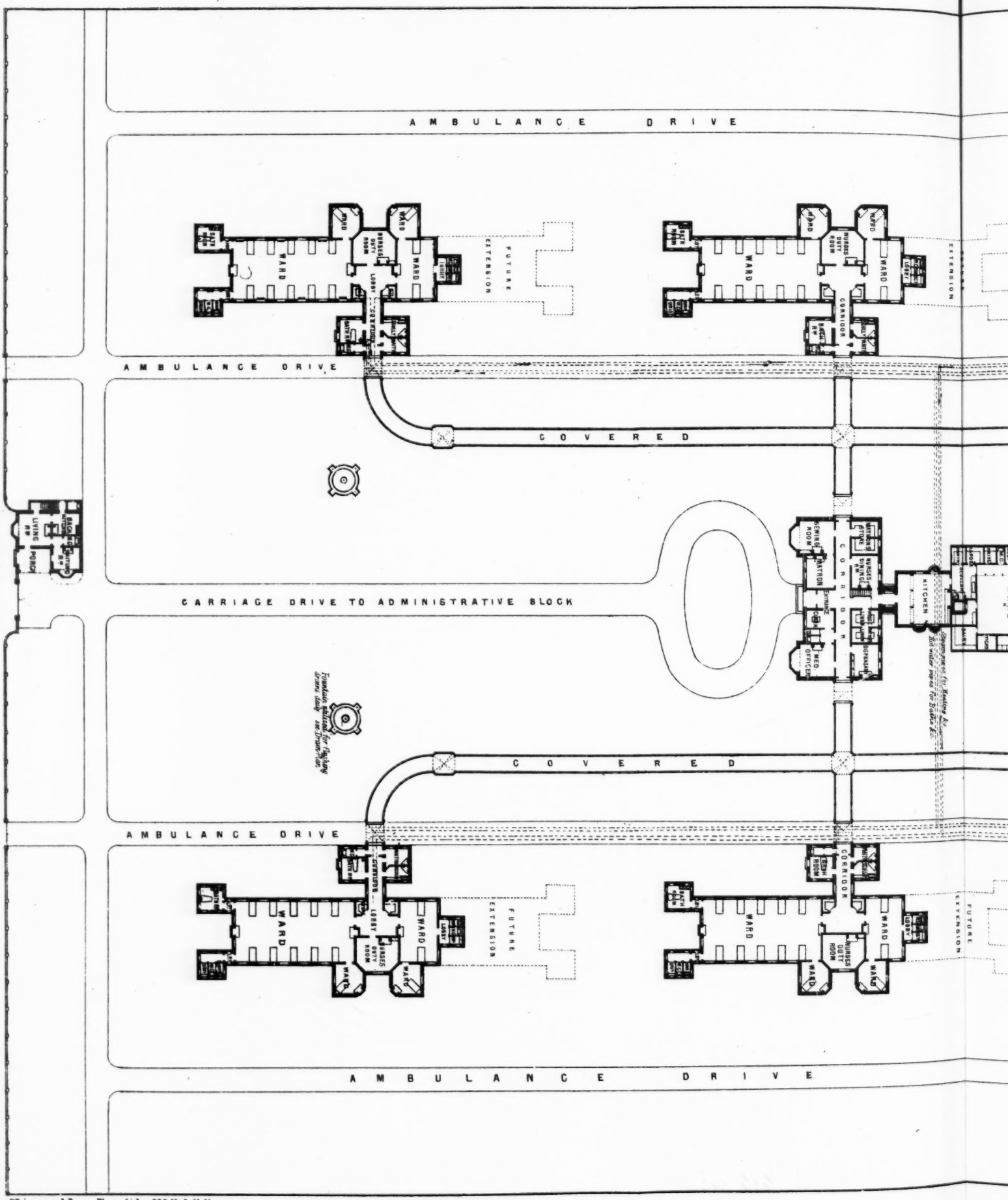
Wyman & Sons Photo-Litho 6 Queen St London WC



Whiteman & Bass *Photo-litho* 236 High Holborn

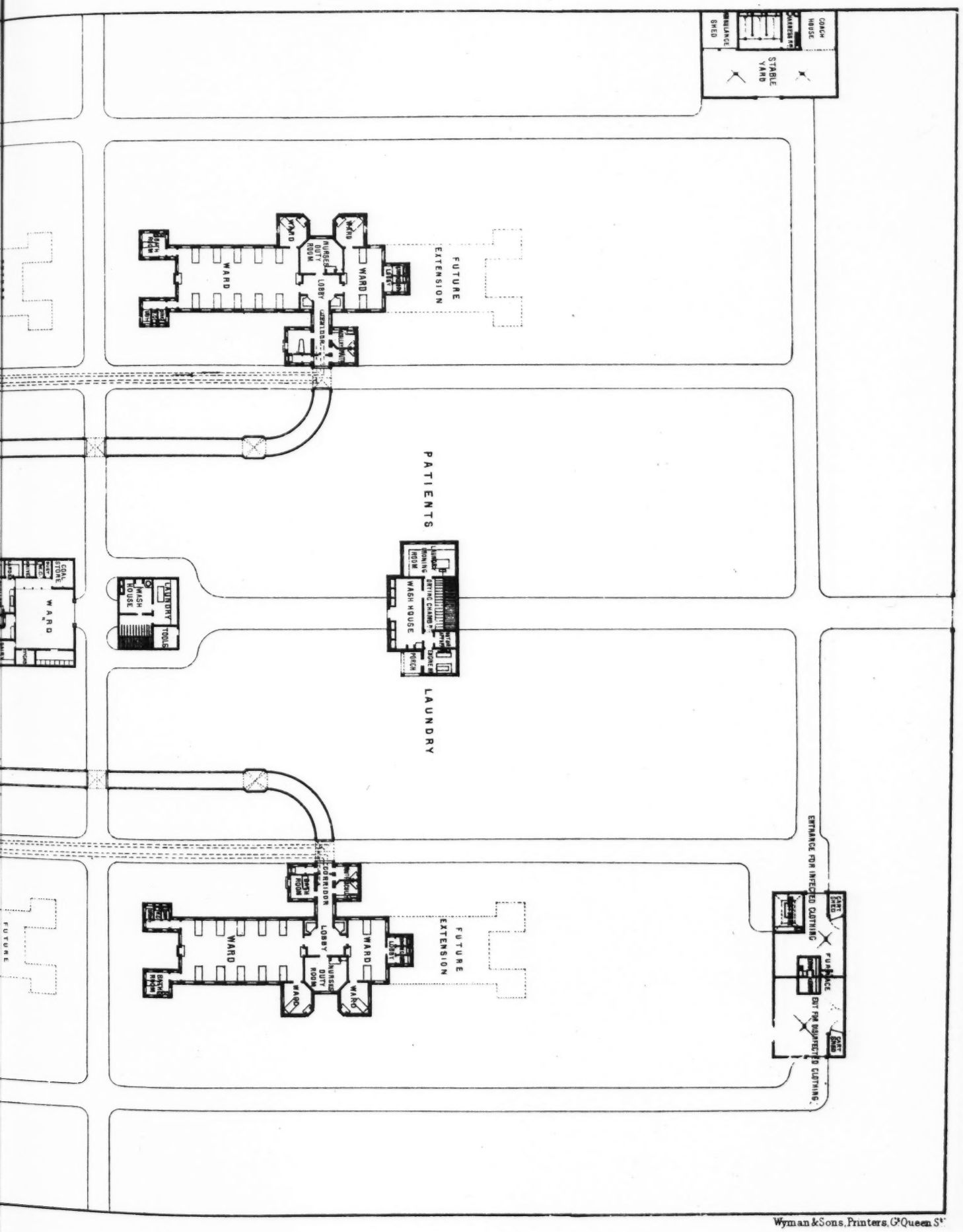
Wyman & Sons, Printers, G^t Queen S^t

HOSPITAL FOR INFECTIOUS DISEASES, NEWCASTLE.—Selected Design by Mr. Arthur B. Gibson, Architect.



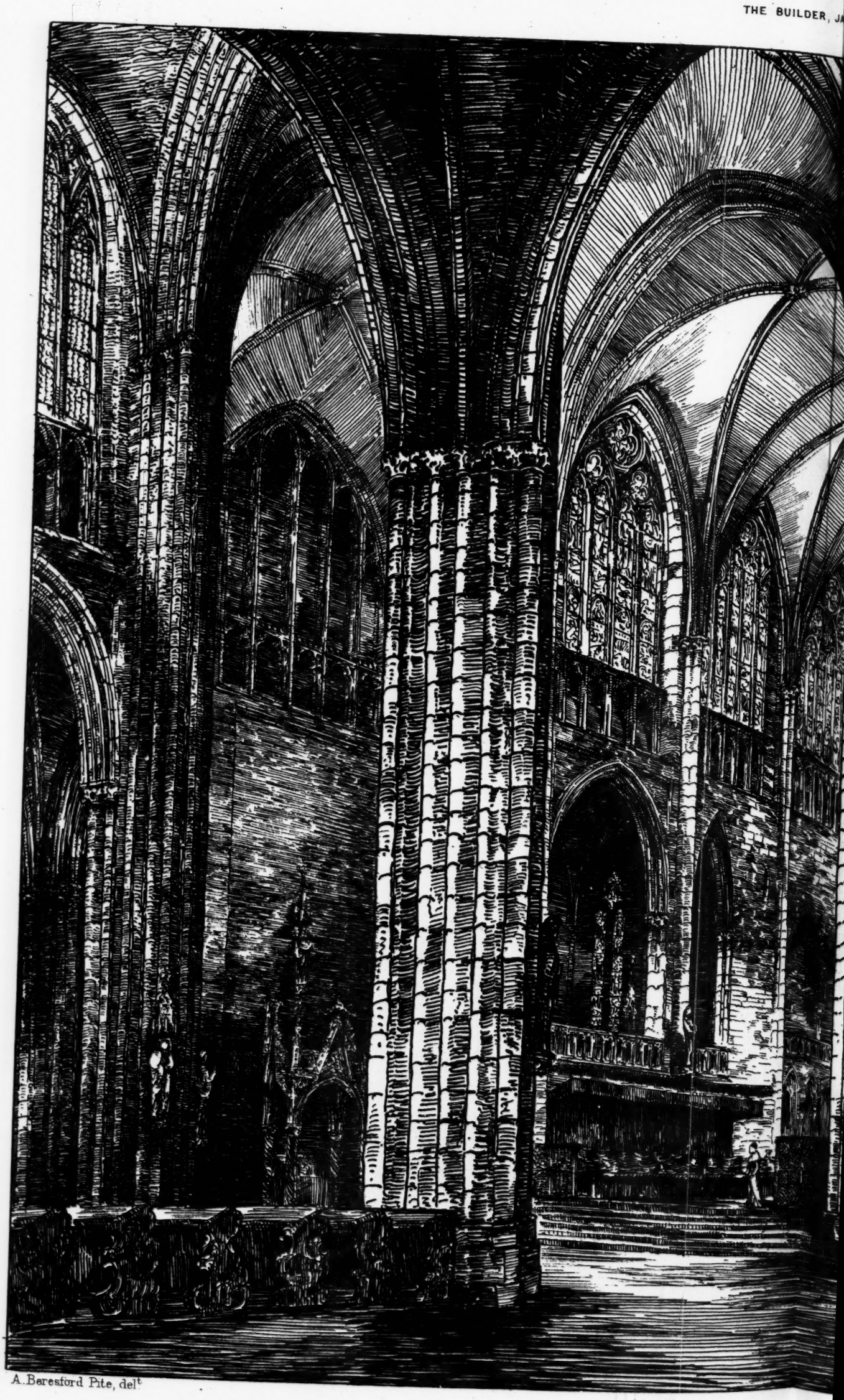
Whiteman & Bass, *Photo-Litho* 236, High Holborn.

HOSPITAL FOR INFECTIOUS DISEASES, NEWCASTLE.—SELEC



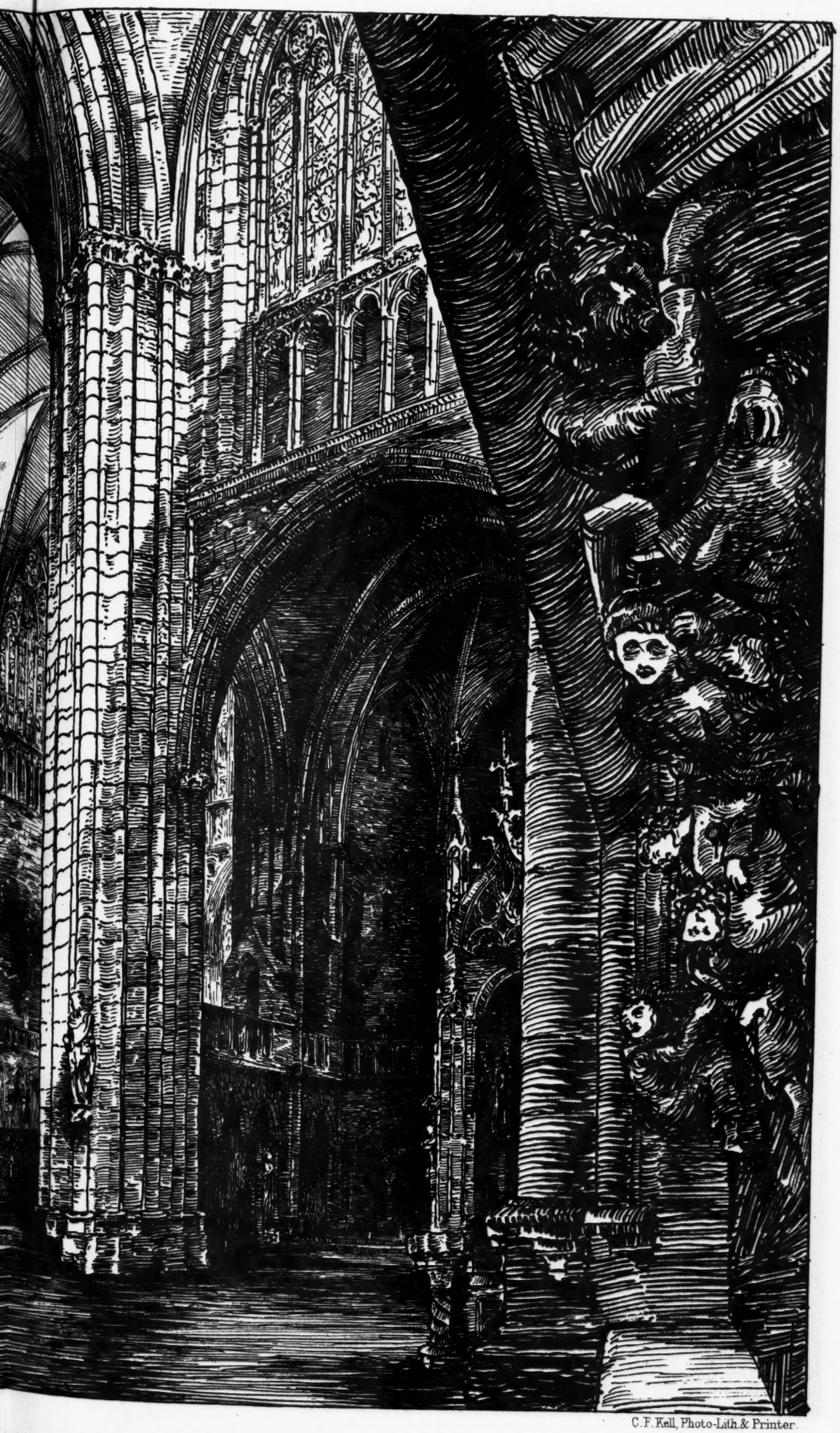
Wyman & Sons, Printers, 74 Queen St.

—Selected Design by Mr. Arthur B. Gibson, Architect.



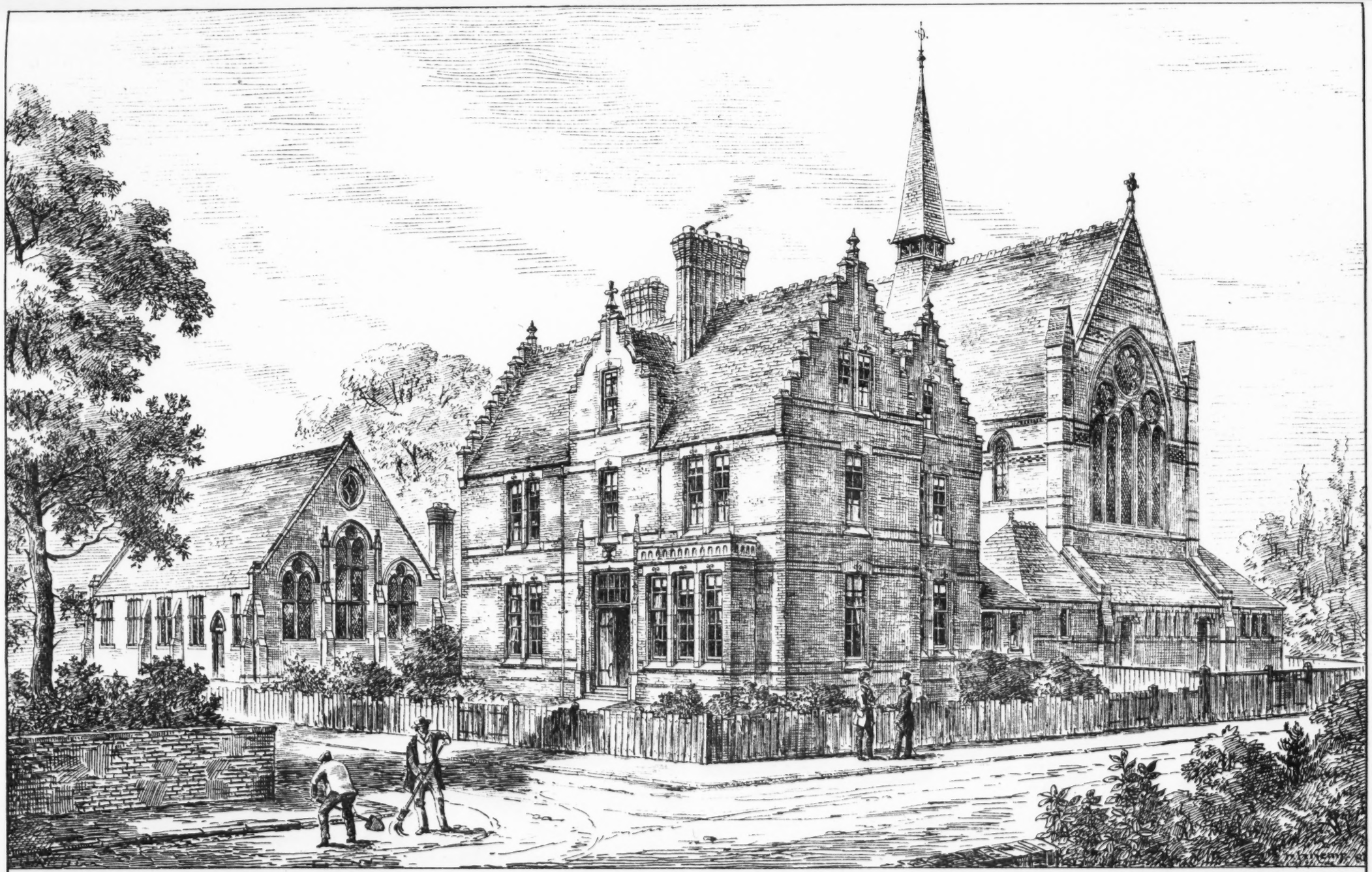
A. Beresford Pite, del.t

RATISBON CATHEDRAL.—VIEW FROM SO



C. F. Kell, Photo-Lith. & Printer.

FROM SOUTH AISLE, LOOKING EAST.

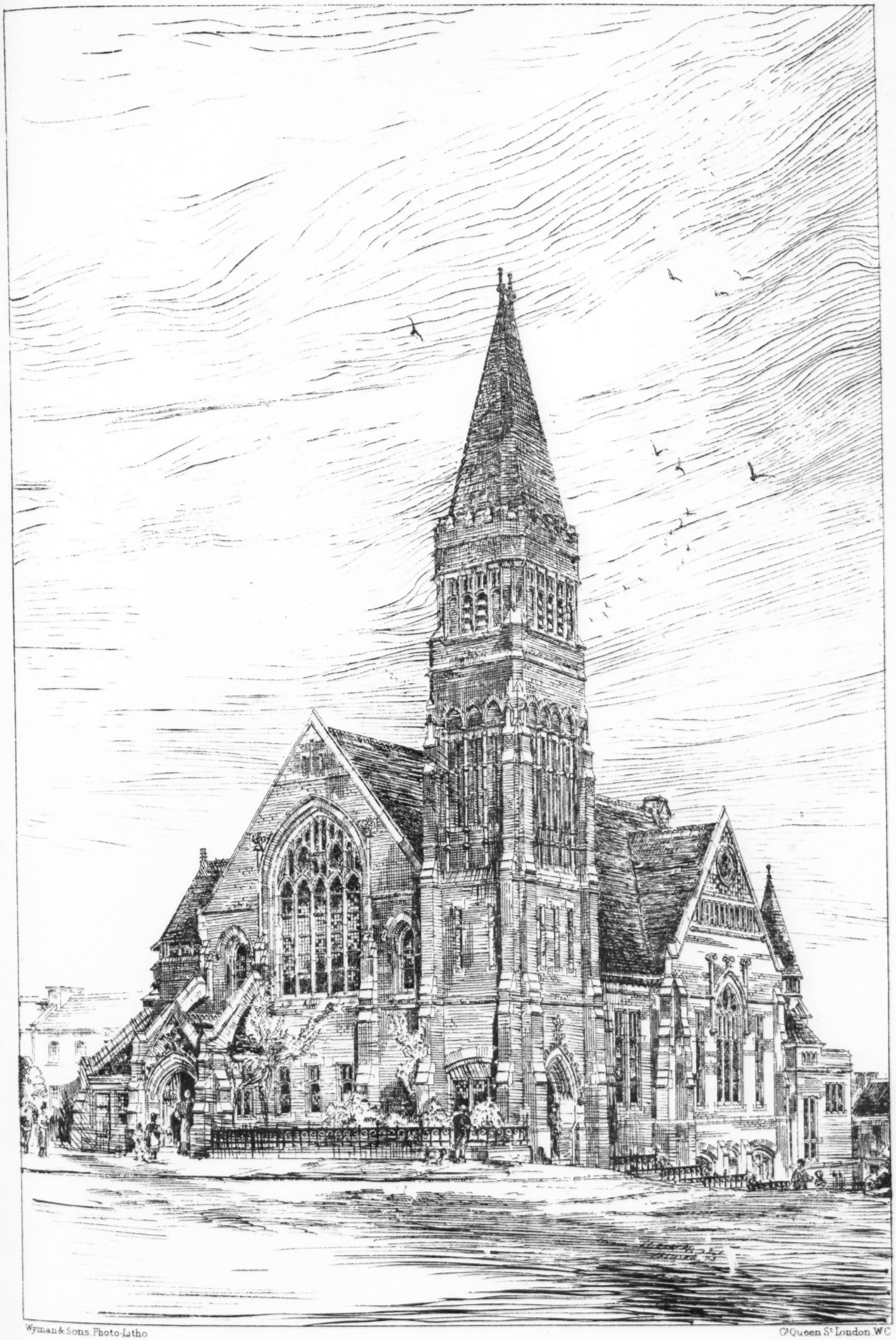


·Church; Vicarage·and·Parish·Room:~ Christ·Church; North·Kensington; London:~ ·J.E.K.Cutts; *Architect:* ·28·Southampton·St:·Strand; London

Vincent Brooks Day & Son. Photo lith.

Wyman & Sons, Printers, Gt Queen St.

THE BUILDER, JANUARY 12, 1884



Wyman & Sons Photo-Litho 6 Queen St London WC

PRESBYTERIAN CHURCH (OF ENGLAND), HARTLEPOOL.—Messrs. T. L. Banks & Townsend, Architects.

ving

THE INTERIOR OF RATISBON CATHEDRAL.

THIS cathedral has been previously illustrated by Mr. Brewer's drawings of its characteristic German apse and its side altars, with their baldachins. The view now published is one looking across the transepts towards the choir. The justness of proportion that distinguishes this cathedral, and its beautiful internal effects as evening draws in, will be remembered long after the very many other interesting points of the building are forgotten. Excepting the sunk spandrels to the nave arcade, which give an uncomfortable appearance of thinness to the wall, there seems to be nothing lacking in its perfection. The detail is so well designed that it is never obtrusive, and leaves the eye to enjoy the complete calmness and repose of the interior.

There is no large window in the north transept, as a tower erected for scaffolding purposes when the church was being built still remains (and one would not wish it away) against the external wall. A holy well with a beautiful canopy stands in the south transept. The mass of carved figures to the right of the picture are the corbels under a wall arcade which, grouping into a mass, hide the arches they carry. The drawing is from a study in ink made on the spot.

CHURCH, VICARAGE, AND PARISH ROOM, CHRIST CHURCH, NORTH KENSINGTON.

THE above vicarage is just being completed. It consists of basement with larder, beer-cellar, wine-cellars, and a large coal-cellar. On the ground-floor are dining and drawing rooms, study, kitchen, scullery, cook's pantry, china and store room, lavatory, and water-closet. On the first-floor are four bedrooms, a dressing-room, a bath-room, and a water-closet on the half-landing. On the second-floor there are five bedrooms, and box and cistern room. It is built of stock bricks, with red brick dressings to all quoins and door and window jambs. It is covered with tiles. Special attention has been paid to ventilation and sanitary matters, and a large shaft runs to the top of the house to take the smells from the kitchen. The contract is 1,894*l*. The architect is Mr. J. E. K. Cutts, of 28, Southampton-street, Strand. The church was finished and opened in April, 1881; it was designed by the same architect, and was built by Messrs. Hook & Oldrey. It seats 750 people, and cost, including fittings, architect, and everything complete, 5,103*l*. The parish-room will probably be commenced in the spring, and the estimated cost is 1,000*l*.

PRESBYTERIAN CHURCH OF ENGLAND, HARTLEPOOL.

THE above church, of which we give an illustration this week, is built on the site of an old stone quarry at the junction of Brougham-street with Union-street.

Union-street has a very steep descent, about 13 ft. in the length of the building, so that well-lighted Sunday-schools were obtainable under the church.

The accommodation of the building is as follows:—

Church, to seat on the ground-floor, 450; in end gallery, 100; minister's vestry, manager's room, ladies' room, organ-chamber, large Dorcas room over the manager's room.

Sunday School:—Main school, with three large class-rooms at the end, facing the superintendent's platform; large infant school; teachers' room, and kitchen.

The style of architecture is Perpendicular, with some Flemish feeling. The material is red brick, with red freestone from Egremont, in Cumberland. The entire cost, exclusive of site, is a little under 5,500*l*.

The contractor was Mr. Jonathan Johnson, of West Hartlepool; and the architect is Mr. T. Lewis Banks (now Messrs. T. L. Banks & Townsend), of 23, Finsbury-circus, London.

Australian Timbers.—At the Calcutta Exhibition there is a fine display of timber specimens from New South Wales, showing the richness of that colony in woods suitable for industrial purposes of almost every description.

FOUNTAINS ABBEY.

THIS was the subject of the paper read at the meeting of the Architectural Association on the 4th, by Mr. J. Arthur Reeve.

After describing the main points in the origination and the character of the Cistercian order and their buildings, and referring to the valuable elucidation of the subject by the late Mr. Sharpe, the reader of the paper commented on the special and almost universally observed rule in regard to the position of the Cistercian abbeys in a secluded valley, as if seeking the greatest possible distance from the everyday life of the world, and continued:—

This similarity of position is by no means the most striking point of resemblance between different abbeys belonging to this order, for on making a careful comparison of many Cistercian monasteries, we find that the general disposition of all the main buildings, namely, those surrounding the cloister-court, is almost identical in every case; so much so, in fact, that it is possible, as Mr. Sharp has shown, to give a typical ground-plan which shall be a fairly true representation of the Cistercian abbeys built before the year 1200. This early arrangement of the buildings is still almost perfect at Fountains, the only alteration which has been made being in the choir of the church, which, during the first half of the thirteenth century, was reconstructed on a very grand scale. During some excavations, however, which were made about thirty years ago, the foundations of the original choir were found, which show that when first built Fountains was no exception to the rule then generally obtaining throughout the Cistercian order.

The ground-plan of this splendid abbey is hanging up on the wall yonder, and, if you can see it, will help you to understand this peculiar disposition. You will see that the cloister-court forms almost a perfect square in the centre, and round this are placed most conveniently the various buildings in the following order:—The whole of the north side is occupied by part of the nave of the church, which also extends westward beyond the *domus conversorum*. The east wall is formed by the west wall of the south transept, the chapter-house, and a small portion of the fratry; on this side we also find a sacristy between the church and the chapter-house, and a passage between the latter and the fratry; these are generally to be found more or less in these positions respectively. On the south side are the kitchen, refectory, and buttery, and at the eastern end, between the fratry and the kitchen, is placed the staircase leading to the monks' dormitory, scriptorium, &c., on the first floor. The west wall of the cloister is flanked by the northern part of the great building destined for the use of the *conversi* or lower order of monks, who, like their superiors, had a large day-room on the ground-floor, and as large a dormitory above.

Of these several buildings the church and the chapter-house run east and west, and the fratry, refectory and *domus conversorum* run north and south, as at Cisteaux, but not universally adopted.

I will now proceed to give a short description of these buildings in the order in which they have been mentioned.

The original church at Fountains, before it was altered, was a good type of the earliest form of Cistercian churches, describing on plan the shaft of a true Latin cross. The nave is long, and the chancel and north and south arms of the transept are all short, and of about equal lengths; the nave had aisles which opened into the transept, but these aisles were not extended to the choir; the transept, however, is provided with chapels projecting from its eastern wall, which flank the choir for about half its length but do not communicate with it. At Kirkstall there are, and at Fountains there were, six of these chapels, three in each arm of the transept, but in France there seem usually to have been only two, partly because not unfrequently the French choirs had aisles even in the earliest abbeys founded by this order. The choir itself and all of these transeptal chapels are square-ended, as at the mother abbey of Cisteaux. That the square form should obtain in England is, of course, by no means strange, it having been the almost universal practice of English Mediæval architects to adopt the square east end, but that it should have been used at Cisteaux and several of the other early Cistercian churches in France is, I think, exceedingly interesting. At the date of which I am speaking almost all choirs in France were built with circular octagonal or polygonal apses with ambulatories and radiating chapels. It was, therefore, a very marked departure from precedent, when the monks of Cisteaux built their churches with a square east end, and one cannot help recollecting, in connexion with this fact, that the prime mover of the reform was an Englishman. May it not have been that this austere man, retaining a predilection for the square-ended churches of his mother country, induced his followers to adopt this sterner form when they founded with him a new monastic order of such severity as the Cistercian? It is certainly the case that when a body of men, or a nation, or a race have been possessed very strongly with one idea, they have always expressed this idea in their architecture, and I am much inclined to believe that this square-ended church was to the Frenchmen of that day a very definite external sign of the severe life of self-abnegation and fasting which they were desirous of living.

Before quitting this part of my subject, it would perhaps be well for me to give translations of one or two of the rules which bear most directly on the construction and decoration of their churches, to show you that this subtle connexion between their architecture and their lives did not altogether escape their notice. Here is a rule which immediately stamps a peculiar character upon all early Cistercian churches:—

"Let not stone towers for bells be built, nor wooden ones of immoderate height, for they detract from the simplicity of the order."

I believe many of the French Cistercian churches show signs of having originally possessed these wooden bell-turrets; but as I have not seen any Cistercian work abroad I cannot speak from experience on this point. In England, however, even from the earliest times, this rule seems to have been neglected; for at Kirkstall, founded in the year 1145, the lower story of the tower over the crossing is of the same date as the rest of the church; and at Fountains there are evident signs of the same sort of low twelfth-century stone tower having once existed.

Next as to the bells themselves it was thus ordered:—

"Let the bells of our order be managed that one only shall be struck at a time, never two together."

Thus preventing the introduction of anything approaching a joyous peal.

But it is with regard to the interior arrangements and decoration of their churches that their rules are most explicit. Take the following, for instance:—

"We forbid sculptures or pictures to be executed in our churches, or in any of the offices of the monastery; because, whilst by such things is intended the exercise of good medi[illegible]tion, or the ordering of a religious gravity, these [illegible]e too often neglected; but painted crosses whic[illegible]e of wood, we may have."

Again,

"Superfluities and remarkable curiosities in sculptures, paintings, buildings, pavements, and other such like things, which sully the ancient purity of the order, and do not agree with our poverty, we forbid to be made. Also pictures, except the likeness of the Saviour. Let the father abbots diligently inquire into all these matters in their visitations, and cause them to be observed."

They also forbade the use of stained glass in the following words:—

"Let white glass only be used, excepting in abbeys which formerly belonged to another order; these may retain what they had before the time of their conversion."

It is also clear from the following that they restricted the number of candles to be used in their churches:—

"When the feast of any saint shall occur, it is lawful to burn the light of a lamp or of a candle at the altar chiefly consecrated in his honour."

There is also a rule forbidding that any but kings, queens, or bishops should be buried in their larger churches; abbots and those who died after having been called to the abbacy might be buried in the chapter-house; and the common monks were interred in the cloister quadrangle; the *conversi* and people who died in the *hospitium* were no doubt buried in the larger graveyard in the immediate neighbourhood of the abbey.

Now, all these rules which I have enumerated,

and many others which I cannot now give you, point most clearly to the strong desire which these old Cistercians had to keep out of their churches and monasteries everything which could hinder them from living what they considered a holy life; and it is interesting to notice in how many respects they objected to just those things which the Reformers of the sixteenth century also waged war against,—stained glass, sculptures, paintings, and superfluities of all sorts; but one cannot help regretting that the great sixteenth-century Reformation was not carried on in the same charitable spirit as its less stirring prototype in the twelfth century was effected. The latter, instead of causing the destruction of hundreds of ancient monuments and the mutilation of nearly all, had, on the contrary, the effect of raising up one of the grandest styles of architecture which the north-west of Europe can boast,—a style which, depending, as it did, entirely upon breadth of design and nobility of proportion for its beauty, was always productive of buildings of the first order.

And herein I cannot help thinking that we as nineteenth-century architects may learn a very useful lesson, namely, that richness of detail is not by any means necessary to the production of beautiful buildings; on the contrary, I believe that unless the general design of a building be beautiful, the more detail which is added the less satisfactory will be the result. Elaborate detail added to an ill-designed building merely suggests waste. It may be as near perfection as possible in itself, but the beauty of individual features cannot impart beauty to a building any more than a perfectly-formed nose will make a man handsome if the rest of his face is crooked and out of proportion; whereas if the general outline of a building be good, and the proportion of its various parts to the whole and to each other be satisfactory, then, depend upon it, it is quite unnecessary to adopt elaborate carvings and minute details; for the beauties of proportion and harmony are quite sufficiently great in themselves to satisfy the human eye, and without them it can never receive pleasure. It is also very evident that on seeing a building for the first time one ought to be struck by the beauty of the whole rather than of the parts, because the latter exist but for the former, and therefore ought always to be subservient to it. But do not for a moment suppose that I care little what detail is added to a building so long as good proportion is given to the whole,—that would be to lose sight of quite half of the teaching of Cistercian architecture; indeed, unless details are very carefully attended to, no truly satisfactory result can be attained, because harmony will be lost; I do feel very strongly, however, that in the present day there seems to be a great inclination on the part of architects to be careless of the general outline and grouping of their buildings, hoping that defects of this nature will be atoned for by elaborate and often unnecessary carvings, the beauty of which is unquestionably great, and, owing to the increased knowledge on these subjects, is fortunately easy to obtain. But not to detain you too long on this point, which, after all, is a great digression from my subject, I will only say further that, as it seems to me, the first thing to be aimed at in making a design is good proportion, and if we obtain this we need have no misgivings as to the result of our work, however little money we may have to spend on elaboration; while, should it ever be our good fortune to be able to spend money freely on any of our works, it will then be in our power to add the charms of elaborate detail to a building which even without them would have been beautiful.

As I said just now, the choir of an early Cistercian church is always short, and, I think, we have now seen enough of the simplicity of the order to account for this. It was, no doubt, because they admitted only a very plain ceremonial at the altar, which would better accord with the general simplicity of their life; but in the thirteenth century, a little more than 100 years after the foundation of the order, they got tired of this restriction, and in England, as well as in other countries, we find Cistercian choirs of very considerable proportions of this date.

Look at the plan of Fountains, for example, and you will see that the area of the choir, as reconstructed during the first twenty-five years of the thirteenth century, with its eastern transept, called the Chapel of the Seven Altars, amounts almost to two-thirds of the area of the nave and transept. This late choir also is provided with north and south aisles, one of the original transeptal chapels on each side having been destroyed to admit of this. Of course, in some ways this extension of the choir must be looked upon as an improvement. It was in itself very fine, but I think any one who has seen the original twelfth-century choir at Kirkstall must have been immensely impressed with its solemn grandeur, which to me always seems to harmonise better with the rest of the Abbey than does the extensive choir of Fountains.

Among the sketches I exhibit is one showing my idea of the exterior of the original choir of Fountains Abbey, with the central tower and north transept; and another showing the interior of the existing choir restored. They are both the result of a considerable amount of study, and are not simply the wild imaginings of an architectural student.

The exterior design of the nave consists merely of a row of semicircular-headed clearstory windows above, and a row of similar aisle windows below, divided from one another by the rather shallow aisle roof. Pilasters of slight projection divide both clearstory and aisle into bays.

The interior of the nave is not less severe than the exterior. The nave arches, moulded in the simplest manner possible, are supported on plain cylindrical columns, with shallow capitals and bases, and between the arcade and the clearstory there is merely a piece of blank wall surmounted by a plain bull-nosed string-course, upon which the jambs of the inner arches of the clearstory windows rest. Yet every one must acknowledge that it is a first-rate piece of architecture, notwithstanding this almost childish simplicity. It seems probable that the nave and transepts were covered by means of semicircular wooden ceilings, but the original choir was probably vaulted in stone, as at Kirkstall. The nave aisles had stone roofs of a very peculiar character; transverse semicircular arches springing from corbels inserted about two-thirds up the nave piers and at a similar height on the aisle walls, supporting transverse pointed barrel vaults, which followed the line of the main nave arches; it was, in fact, little more than a prolongation of the nave arch to the aisle wall.*

REVERSIONERS AND THE ACQUISITION OF RIGHTS TO LIGHT.

IT is to be hoped that the architectural world has not forgotten that the Committee of the Institute on the law of light and air is still investigating this subject. The matter is one of so much importance that all those members of the architectural profession who have had much to do with it should certainly endeavour to lay before the committee as clearly, but as concisely as possible, the opinions which they have formed on the points under consideration. There is one aspect of this subject which deserves a good deal of consideration,—one portion of it which certainly seems to require a change. We refer to the law as it exists in regard to the acquisition of an indefeasible right to light by the owner of a dominant over a servient tenement when the latter is in the occupation of a leaseholder. As the law now is, the owner of the dominant tenement under the circumstances stated can acquire a prescriptive right to the light in question against the reversioner of the servient tenement, although the latter may not have been in a position to prevent such acquisition. For the law has laid it down that if the leaseholder will not permit the reversioner to come on the land for the purpose of preventing the growth of the easement in question, then the reversioner has no remedy and cannot prevent the acquisition of a right which may be seriously detrimental to the value of his property. It is impossible to suppose that when the Legislature passed the Prescription Act they could have contemplated the serious consequences which might ensue from it to so many owners of property. That the point to which we allude is one of real hardship there can be no doubt, because it is notorious that these rights are acquired almost without the knowledge of the person in whose favour they grow. A house-owner opens a window which obtains its light from adjoining ground belonging to an adjoining owner, but the actual possession of which belongs to a leaseholder. The latter hardly takes note of the new window; it is no annoyance to him, and it rouses nothing more than the feeble interest which many apparently unimportant doings of neighbours have for neighbours. The leaseholder is a good tenant, and perfectly friendly with his landlord, and the latter, as he receives his rent punctually, pays little attention to the property. Time goes on, and the lease is ended and the reversioner thinks it desirable to improve and enlarge his house, and thereupon begins work with this object. The owner of the adjoining house, whose once new window has now attained the age of twenty years, is disgusted to find that his neighbour's improvements are likely somewhat to darken the room in which this window is placed. He growls, and then prepares a letter to the neighbour on the subject, who returns a civil reply, regretting that the improvements inconvenience his neighbour, but states at the same time that they are essential to the well-being of the property in question. Then the neighbour, who is about to submit to the inconvenience, thinking to himself he should have made some arrangement with the adjoining owner years ago, mentions the difficulty to a friend of his, an architect, with a view to the lightening of the room in question. The architect at once asks him how long the window has been in existence, and the age thereof is given. The architect equally promptly informs his client that he can legally stop the improvements of his neighbour, as they are a substantial infringement of an indefeasible right which he has acquired by a twenty years' user. And then an architect and a lawyer are forthwith consulted by the owner of the servient tenement, and he finds to his cost that he must make some kind of terms with the owner of the dominant tenement.

Sometimes a tenant may from some cause or other refuse to allow his landlord to enter on his premises, with the object of preventing the acquisition of a right on the part of a neighbour by lapse of time. But these illustrations sufficiently show that reversioners may often be placed in situations of great difficulty. It is quite impossible to keep a strict eye on neighbouring windows and openings, and in many cases the owner of the dominant tenement is unaware that he is actually gaining an indefeasible title to light through a particular aperture. It is only when something pointedly draws attention to the fact that he becomes aware of the right which the law is so kindly creating for him. It may, of course, be said that any prudent landlord would take sufficient notice of his property to prevent the growth of hostile rights of light. But the fact must be borne in mind that in practice many reasons prevent landlords from so doing, and, indeed, as we have endeavoured to show, both the owner of the dominant and the owner of the servient tenement are often ignorant of the gradual growth of this important right, one as favourable to the owner of the dominant, as it is burdensome to the owner of the servient, tenement. There can be no doubt that any man of considerable practical experience must be able to recall more than one case of hardship arising from the acquisition of rights against reversioners. Of course, if the committee of the Institute were to recommend a repeal of the Prescription Act, so far as it concerns rights to light, there would be no more difficulty on the point. But if they should not go so far, then some kind of practical way of dealing with this part of the subject will have to be devised. Of course, so far as regards actual indefeasible rights which have become such by virtue of the Prescription Act, these must be respected. But either as regards new windows altogether, or windows in respect of which rights are in process of creation, but have not become indefeasible, some method of doing justice to all parties must be found. Without putting the following plan forward as an absolute panacea for this evil, it yet seems to be one which may fairly be considered an equitable remedy. We would propose that the owner of the dominant tenement at the time new windows were made, or at the time when this new arrangement came into force as regards windows then in existence, but which had not yet an indefeasible right to light, should be bound to serve on the occupier of the servient premises a notice stating that after the lapse of the regular prescriptive period he would claim to have an indefeasible right to the win-

* The remainder in our next.

dows in question. This would give full notice to the owner of the servient tenement, and it would then remain for these two parties to make such terms as should be convenient to both. In the case of new windows in the future it can scarcely be doubted that it would result in some arrangement being made before the new building was erected, or new windows made in old structures. Such arrangements would lessen many bitter disputes, some of which culminate in litigation, others in what has been called the "brutal" mode of preventing the acquisition of light by blocking up windows with boards. We have carefully guarded ourselves against saying anything for or against the main question of the repeal of the "light" sections of the Prescription Act; but if this is not done, the point we have here touched on must be dealt with in a manner to do justice to all parties, whether interested in the dominant or servient tenements.

THE PROPOSED SALE OF THE FRENCH RAILWAYS,

AND THE STATE AND THE RAILWAYS IN FRANCE AND IN ENGLAND.

To sell a poor property for a large price is usually thought to be a good stroke of business. But there is such a thing as being too clever; or, at all events, as so acting as to merit the reproach. It is to be feared that the proposal now before the world for the sale of the French railways is a case of this kind. The lines in question, of course, are not the lucrative lines conceded to the great companies. They form a minor network, of about 1,000 miles in length, belonging to the State. They have cost about 15,000*l.* per mile, and the gross earnings only amount to about four per cent. on this capital. The net earnings only amount to twenty per cent. of the revenue, so that the return on the capital invested in these lines is only at the rate of about seven-eighths per cent. per annum. The contrast between these State-managed lines and those of the six great companies is of the most striking kind. On 15,000 miles of railway in 1877, which had cost about 26,000*l.* per mile, the gross income was nine per cent., the net income 5·56 per cent. all round, and the loan arrangements were such as to allow, in some cases, a dividend of more than ten per cent. on the original share capital.

These state-owned railways, therefore, constitute a property of but small intrinsic value compared to the cost of construction. At the end of 1879 this cost was returned at a little under 15,200,000*l.*, on which the net profit for the year was only 131,000*l.* As the price of 4½ per cent. *rente* on the Paris Bourse at the commencement of the year was a little under 106, the proportionate value of the stock in question is not much more than three millions sterling. Thus, what is called the "Sale" by the Government of these lines, for from 16,000,000*l.* to 17,000,000*l.* is, in fact, a disguised loan. The arrangement can only be carried through by means of a guarantee of interest on the part of the Government. In point of fact, in the last returns now before us, we find a sum of 45,970,363 francs entered as paid by the State. We apprehend that there can be no doubt whatever that it would have been more economical for the French Government to sell their railways, out and out, for what they were worth, and to borrow any further sum of which they are in need on the usual market terms, than to enter into an engagement which requires so much explanation in order to be understood by the public; involving a permanent charge on the income of the country, the full advantage of which the State fails to realise.

The industrial interests of England cannot afford to be left in ignorance of the cost of carriage and of commnnication in other parts of Europe. With the beginning of the year we witness the gathering together of railway proprietors and representatives with a view of bringing to "bear in a forcible manner arguments which no minister, to whatever party he belonged, would be able to resist." On the other hand, the recommendations of the Select Committee on Railways, as well as of that on canals, have yet to be brought before Parliament, as the basis of legislation. The great point necessary is for Parliament and the public to be fully informed, not only of the facts and cost of transport within our own shores, but of those which prevail throughout Europe. By obtaining full information on this subject we are convinced that the Railway Shareholders' Association would do much more to increase the net income of the railway proprietors, and at the same time to increase the real wealth of the country, than by following the course apparently indicated by the chairman of the meeting at the Cannon-street Hotel on the 3rd current. Our railway dividends are not what they ought to be, and they present a very unfavourable comparison with those of the great French railway companies. It is important to the English public, first, that this fact should be fully made known, and secondly, that it should be traced to its true cause. The goods and passenger mileage traffic on the French lines is almost exactly the same, on an average, as that on the English lines. The latter, however, are constructed at a vastly higher cost; an expense incurred in order to carry that poor-paying mineral traffic, for which the French statesmen are doing their utmost to provide inland waterways. This should be made known to English shareholders, at the same time, that they should be enlightened as to the costly and mischievous results of State ownership, and State working of railways not only in France, but in Italy and in Belgium. Full, free, impartial, and honest information would withdraw the "railway question" from the list of questions; as it would enable a competent judge to understand the true principle of securing the best returns both to the railway customers and to the railway proprietors.

THE RESTORATION OF THE LIEBFRAUENKIRCHE, AT ARNSTADT.

THE authorities of the principality of Schwarzburg-Sondershausen have since 1878 been engaged in the restoration of the above structure, which has gained a certain renown beyond the limits of Thuringia. In a detailed statement contributed to the *Deutsche Bauzeitung* by Herr Stier (the architect in charge of the work), it is stated that the church comprises two parts of distinct origin; a longitudinal portion, built in the Romanesque style, and a high choir structure with three chapels and a transept, dating from the Gothic period. Between these two portions rises a massive tower, of the later Gothic period, while the west front is ornamented by two smaller towers, differing in height and construction; one displaying Romanesque features and the other Gothic forms.

The total internal length of the Romanesque nave is 90 ft.; the forms of this older part being very simple. It is only the portals in the north and south fronts, and the larger portal in the west front, which show any richness of detail. Notwithstanding the plainer features of the interior, it is considered that these portals and the buttresses on the side walls indicate a period of construction not earlier than the end of the twelfth century. This supposition is likewise confirmed by various historical facts. It is conjectured that the church at first possessed a Romanesque choir, which was replaced by the more recent Gothic erection.

The southern tower of the west front is spoken of as being a model for a Romanesque church-tower of moderate dimensions. It commences with a short square portion which rises from the compact mass of the façade, and above this are two octangular stages. A high massive stone point completes the tower, which is spoken of as being as artistically matured in its general plan, as it is perfectly carried out in its separate details. These latter portions of the work indicate the fact that workmen were occupied at the same time who had respectively acquired skill in the two distinct styles of architecture already referred to. So far as traces exist of the internal ornamentation of the building, it would seem to have been in harmony with the exterior.

Remains are still preserved of stained glass windows, belonging to the fourteenth century, the colours and designs of which are specially good. It would seem that the church at one time possessed twenty-two altars. At present the principal decorative features of the interior are connected with the monuments of the Schwarzburg princes buried in the northern choir-chapel.

In the course of time various wooden erections disfigured the church, and from the time it was used as a war depôt in 1813, its architectural condition gradually became a subject of discussion. In 1843 some measures were taken with a view to a restoration being carried out, but with a want of technical knowledge on certain points of importance. Thus the middle tower was supported in a defective manner, and the stones of the exterior which had given way through frost, were bound together with iron clamps. Apart from the rough nature of this plan of operation the rusting of these fastenings served to promote the decay of the structure.

The idea of the present restoration originated in 1855, but from various causes the preliminary steps progressed slowly, and it was not until 1878 that active measures were taken, by which time the Government grants and collections from other sources amounted to about 7,500*l.* The work undertaken included the following restoration: the choir (together with the supplying of the unfinished crownings), the middle tower, the western front, the western portal, and the north and south towers. The available financial resources having been exhausted by the works now completed, the Landtag of the principality has voted a further sum of 4,000*l.*, which will be required for the restoration of the vaults on the south side, the flooring, the doors, and finally for the glazing of the windows. A further sum of 2,500*l.* will, it is hoped, be raised by collections, and by a lottery. This will be devoted to the internal decoration, the pulpit, organ, and other requirements.

KÖNIG'S PROCESS FOR PURIFYING WATER.

THE above process (described in the *Jahrbuch der Pharmaceutischen Centralhalle*) is founded upon the general principle that the evils which have to be remedied in such cases arise from the following causes:—

1. From the high proportion of suspended organic matters or muddy substances in flowing water; dye stuffs being also present in the refuse water from dye-works.

2. From evil-smelling products of decomposition (sulphide of hydrogen, sulphur combinations, or other reduced combinations).

3. From the partial or total want of oxygen.

The mode of purification depends entirely upon local circumstances and requirements, but the general principles of the systems in use are said to be (1) the use of clarifying ponds, into which chemical agents are introduced to facilitate the deposit of the organic particles; (2) the irrigation of meadows either directly or after purification in the clarifying ponds; and (3) the use of graduation-houses, or filtering through coke, sand, &c. The basis of these various methods is the removal of organic substances, and the introduction of air in such a manner as to cause the oxidation of the decomposed substances. It is remarked that clearness is by no means an indication of water being pure, as the suspended muddy substances are by no means as dangerous as the decomposed substances in a state of solution.

Although the purification of water is effected by irrigating meadows with it, the eventual saturation of the earth and the space required for the operation render it advisable for alternative processes to be adopted, the operation of which resembles the former method as closely as possible. Thus the saturation of water with oxygen is recommended by Prof. König as being most successfully effected by spreading out the water in as fine a jet or in as thin a layer as possible. This result is arrived at by means of graduation-houses, but, on account of the expense connected with this system, trials have been made as to the use of wire-netting for allowing as large a proportion as possible of the water to come into contact with the air, this being specially promoted by the air acting on both sides of the thin layer, which, besides, is continually broken up at the cross wires.

The trials were made with a tinned wire netting, about 11 ft. 6 in. in height, bent in various directions in such a way as to increase the effective surface. Spring-water was used, to which refuse-water from a factory was added, as well as water containing sulphide of hydrogen The water contained per litre (1¾ pint) :—

	Before the operation.	After the operation.
Oxygen	·18 cubic inch.	·54 cubic inch.
Sulphide of Hydrogen	·30 grain Troy.	·0014 grain Troy.
Sulphuric acid present or formed	·73 „ „	1·09 „ „

The process of oxidation is, therefore, an active

one, and the bad smell of water is also lost after this process. Water containing an abundant quantity of organic substances must first be purified in a clarifying pond.

The height of the wire netting is in proportion to the composition of the refuse water, the height varying according to the quantity of decomposed substances. If there is ·30 grain Troy of sulphide of hydrogen per litre (1¾ pint), a height of 13 ft. to 16 ft. suffices. The width of the wire work is dependent upon the quantity of refuse water. The netting is stretched between wood or iron standards. A netting 1 ft. 7½ in. wide will, it is said, allow of 6 or 7 litres per minute being treated.

THE WROUGHT-IRON EXHIBITION.

WE mentioned the other day, in describing and illustrating some of the wrought-iron work collected and arranged by Mr. A. Newman, at 175, New Bond-street, that he was desirous to have an opportunity of explaining and commenting on the specimens of old ironwork, and their qualities of design and treatment, to a party of practical workmen. This kind of meeting was arranged subsequently, and on Saturday last Mr. Newman conducted a large party of workmen from various firms over the exhibitior, and pointed out the best specimens and their special excellence of execution, to the great interest and pleasure of his hearers. Some clever hands, which only want good suggestions, good models, and good ideas to turn them to the best account, may, we hope, have got a new light on the capabilities of their craft from such an opportunity of inspecting an exhibition containing many examples of the finest type of design and workmanship.

Mr. Newman invites workers in iron to visit the exhibition on any Saturday afternoon this month.

THE ARCHITECTURAL MUSEUM.

ON Wednesday evening the prizes gained by the students of the Art School, the classes for which are held at the above Museum, were distributed by Mr. Beresford Hope, M.P., in presence of a considerable gathering of the students and their friends. It appears that the evening classes are attended by 112 pupils, and that altogether the students who receive instruction reach the respectable number of 150. The specimens of their work which had been successful in one form or another were displayed on a screen. They were some eighteen in number, and comprised half a dozen paintings and drawings from the life; a couple of sepia drawings from casts of ornament; a design for a carpet; and others for chimneypieces and silversmiths' work. It cannot be truly said that the level of excellence attained was at all a high one. The tone of the proceedings was throughout apologetic. No medals had been received for the work of the past session, and the disappointment was a real one, and not to be explained away by all the efforts of the orators who addressed themselves to the ungracious task. Indeed, the gloom was deepened by the reiterated assurances of the successive speakers, who dwelt upon the fact that there was really no cause for despondency. A gentleman present had the good fortune to introduce Macaulay's New Zealander to the company, and predicted that the colonial antiquary of the far-off future would find nothing in the way of ornamental art bequeathed him by the adherents of Queen Anne to compare with the bequest of our Mediæval ornamentalists. The sentiment was loudly applauded, and Mr. Beresford Hope, with the tact of a practised speaker, seized upon the incident and made it the occasion of some good humour and not ineffective raillery at the expense of the Queen-Annists and to the glory of that Mediæval art by which he was then surrounded. He was upon perfectly firm ground. Nothing can ever detract from the unsurpassed beauty of those examples from Ely and York, Lincoln, and Chartres, with which the walls of the Architectural Museum are adorned. And no one in his senses holds up the present mode as equalling it in artistic merit. But it does not seem to have occurred to any of the speakers that in this home and stronghold of Mediævalism not one of the designs then before them was Gothic in character and *motif*. Their children shall be their judges. The fact is, the Museum has become an anachronism. At its foundation nearly the whole architectural profession was agreed that Gothic was your only wear. Now the adherents of that creed are narrowed to a sect. They are suffering for the sectarian spirit in which they conducted their work, and, having excluded all but a certain phase of art, have been in turn excluded. If the Museum is to live and increase in usefulness it must become catholic in its tastes, and encourage its children to a study of art in a wider sense than heretofore.

The address which Mr. Beresford Hope delivered was full of wisdom and point, and an accidental failure in one of the prize competitions gave him an opportunity to bring home to the students a subject of the first importance,—the training of the eye to receive and retain impressions, which the hand should, unassisted, express. This is the great defect of all modern art-teaching. Mr. Hope referred to the well-known case of Houdin, the conjuror, who was trained by his father to notice and remember all the articles in a shop-window as he passed it at a walking pace. By degrees he could bear in his memory hundreds of small articles at which he had only given a rapid glance, and he could not only recount them, their size, figure, and colours, but their relation to each other and their distinguishing minutiæ. Mr. Hope might have referred to the apposite instance of Hablot K. Browne, who never in his life made a study of any of the objects which he drew with so much truth and facility. In the drawing of horses he was supreme; but every horse was drawn from memory after leaving the park or the hunting field, and not one nor any part of one from anything but passing observations. The modern practice reverses all this; and our youth pass endless hours in front of their model only to find themselves powerless in its absence. The schools of design all over the country can produce thousands of lads who can draw and shade and colour anything they see; but who have no more invention than those who have never given an hour to the matter. We are convinced, from some personal acquaintance with the subject, that of all the exercises to which youthful aspirants can devote their attention, none would be so valuable as the reproduction from memory of the facts of nature and art acquired by previous observation. Mr. Hope was equally interesting on the proper scope and aim of art, affirming that art and learning were concomitants; that the ignorant artist was an imperfect artist; and although we should have been better pleased if the artist had not been looked upon quite so exclusively as the interpreter of the work of the historian and the poet, and had been credited with the mission of interpreting nature at first hand, yet there can be no doubt that the address was well calculated to give the student higher aims, and to put him in the way of becoming an artist of independent powers.

Much praise was unanimously, and, no doubt, deservedly, given to Mr. Druce, the head-master of the school, and there is reason to believe in the literal truth of the statement that the general work of the school is quite as good as could be expected considering the small encouragement it receives.

An episode in its history of the past year must not be passed over without record. Mr. Hope has, with his accustomed generosity, given a prize for the greatest number of individual attendances in order to encourage that continuous study which is necessary to success. Two pupils appear to have been rivals for the distinction: one made 120 attendances during the session; the other made 117, and then fell ill. The successful student insisted upon sharing the reward with his disabled competitor, and upon appearing to claim his moiety of the prize was greeted with genuine applause, which was turned to account by Mr. Hope in a few graceful and happy sentences which impressed all hearers and will doubtless be remembered by the youth to whom they were addressed, as a gratification far beyond what he could have enjoyed if he had wrapped himself in an accidental and selfish victory over so worthy a rival. Mr. Seddon, Mr. Ferrey, and some other stanch and tried friends of the Institution spoke as to its successes in the past and with hope for its future,—a hope which its numbers might justify, but which the few and indifferent specimens of work before the meeting scarcely warranted.

There is room for question whether the museum,—*quâ* museum, and apart from its function as a school of art,—has not had its day, and whether the large and choice collection of casts from the best Mediæval art the kingdom affords would not be more usefully accommodated at South Kensington. It need hardly be added that we say this from no want of goodwill towards the Architectural Museum, in which the *Builder* has been interested from the first; but the experience of successive years seems to place it past doubt that a mistake was made in the situation chosen to begin with, and that its chances of success now are more than problematical.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

AT the meeting of this Association, held on Saturday last, in the Library of the Social Science Association, Adelphi, Mr. Jerram in the chair, the discussion of two papers read at previous meetings, on the tenure of office and the position of sanitary inspectors,* was resumed.

The Chairman, in re-opening the subject, remarked that the work of sanitary inspectors was rendered very difficult when there was an unwillingness on the part of sanitary authorities to carry out the law as it stood. That this unwillingness did exist was shown by the fact that Sir Charles Dilke had recently thought it necessary to call the attention of certain authorities in London to the necessity for carrying out the Sanitary Acts of 1866. It was most desirable that sanitary inspectors should go fearlessly about their work, and this they were not able to do at present. They had not sufficient power, and their positions were not sufficiently strong, to enable them to see the law carried out as it should be, while they had inactive but authoritative people over their head.

Mr. Sherborne (Chelsea) said as far as his district was concerned, the inspectors were more or less free agents. It seemed that one of the Acts of Parliament had been lost sight of,—the Act of 1874, which gave the Local Government Board power to compel any metropolitan district, or any district with more than 10,000 ratepayers, to enforce the third section of the Sanitary Act, that which was called the Lodging-house Section. The Board had now drawn attention to that Act, and that was one reason why the urban and rural inspectors should be on a level. He moved a resolution declaring it to be desirable that the position of the metropolitan urban, and rural inspectors should be assimilated.

The motion was seconded by Mr. Poulson, inspector of the Tottenham district, who remarked that he had never found the Board he worked under opposed to sanitary reform.

Another speaker, a rural inspector, said some inspectors refrained from reporting the bad state of property lest they should lose their appointments, and, being met by cries of "Name," he declined to give a name, but said that after his appointment to the first district he inspected, which was in Worcestershire, he was distinctly told that the less he did the better it would be for him.

Another speaker, a London inspector, said, as far as London was concerned the inspectors had no reason to complain, and that it made no difference to him whether the property he had to report belonged to a vestryman or to any one else.

Ultimately the resolution was agreed to, as was also another declaring it to be expedient that the appointment of all officers should be approved of by the Government sanitary authority, and that no officer should be dismissed by any local authority without final appeal to and approval of the Government sanitary authority.

A paper on the sanitary inspection of the dwellings of the poor was then read by Mr. T. Buckworth, sanitary inspector of St. Saviour's, Southwark, in which he pointed out that the district of which he was the inspector was one of the poorest on the south side of the Thames. On the 11th of December last an intimation was made that the President of the Local Government Board desired to inspect the sanitary condition of the district, and when Sir Charles Dilke came to visit the dwellings of the poor in this part of London, the premises he visited were found to be in a worse condition than they had been for some time previously, because, although prior to his visit certain sanitary works had been carried out, and the houses put into habit-

* See last volume of *Builder*, pp. 634, 751.

able condition, the tenants, through their want of necessary and proper knowledge, had produced a great change in the state of their tenements. As showing the ignorance, carelessness, or worse, of some of the occupiers of this class of property, Mr. Buckworth stated that he had repeatedly found scrubbing-brushes, house-flannels, pieces of broken crockery, and empty tins such as are used for condensed milk, in the S bend of the soil-pipe, the result being, of course, the stopping up of the water-closet, and the creation of an abominable nuisance. The question of overcrowding, Mr. Buckworth admitted, was a remarkably difficult one. The Torrens Act and the Act introduced by Sir Richard Cross had been the means of greatly improving the dwellings of the poor. It was no use, however, to remove a nuisance in one part of a district and force it to another, and his experience pointed to a system of erecting dwelling-houses for the poor. In the parish of St. George-the-Martyr, where dwellings had been demolished, the ground on which they stood had not been utilised in the erection of new and better sanitary dwellings, but was still vacant. Thus 300 families had been turned out to seek shelter elsewhere and to overcrowd another district. The supply of water in all districts should be on the constant system and under the supervision of a high recognised authority. The discussion upon the paper was postponed.

BRISTOL AND CLIFTON JUNIOR ARCHITECTS' SOCIETY.

THE annual general meeting for the election of officers, &c., was held at the Academy of Arts, on the 4th inst. Mr. W. E. Hill (Member of Council) presided during the earlier part of the meeting, and Mr. J. C. Moncrieff, A.R.I.B.A. (vice-president), during the latter part of the meeting. The following gentlemen were elected officers for the year 1884:—President, Mr. Chas. F. Hansom, F.R.I.B.A.; hon. auditors, Messrs. Alfred Hartford and F. E. L. Harris; hon. secretary and treasurer, Mr. George E. Ford; assistant hon. secretary, Mr. E. C. Howell; Council, Messrs. H. Hart, W. E. Hill, G. G. Macpherson, W. H. White, R. C. Sconce, and F. B. Bond; Mr. Hansom being chosen president for the third year, and Messrs. H. Hart, G. G. Macpherson, W. E. Hill, and W. H. White, being members of the retiring Council. It was decided that the annual dinner should be held in the latter part of January.

Mr. George E. Ford (hon. sec.) announced that papers for the ensuing session had been already promised by Messrs. J. C. Moncrieff, G. E. Ford, W. E. Hill, and E. C. Howell, and that the Council were making arrangements for a complete sessional programme of papers of a very elaborate character, and which would help to make the session 1884 a complete and thorough success. It was announced that satisfactory arrangements were being completed for the publication of the newly-instituted "Journal of Papers," and that the first number, containing the paper by Mr. F. B. Bond on "Perpendicular Architecture," recently delivered before the Society, would soon be published. The rules for debates and other matters having been decided and confirmed, votes of thanks to the chairman terminated the meeting.

BREAKAGES IN GAS-PIPES.

PROFESSOR VON PETTENKOFER, of Munich, lately delivered a lecture in which he quoted various facts with reference to the manner in which the gas used for illuminating purposes may cause serious injury to the health of residents in a house, if it escapes into the ground and makes its way into cellars, &c. Experiments made at the Munich Hygienic Institute have demonstrated the fact that there is much more danger from this cause in winter than in summer. This fact is explained by the assertion that the cellars or basements being artificially heated in winter, attract the gas from the earth with increased force. Under such circumstances, the gas which has escaped is capable of producing disastrous effects at a distance of 100 ft. from the point of fracture.

Attention was also called to the fact that in its passage through the earth, gas loses its smell whilst retaining its proportion of carbonic oxide. This dangerous feature, which prevents the timely recognition of the danger, only ceases when the earth is so thoroughly impregnated that it has lost its capacity of absorption. Thus an escape of gas underground is far more dangerous than a similar occurrence in a house, as the smell in that case warns the inmates of what has happened. It was suggested by the lecturer that when an escape of gas occurs underground, the company should, on being apprised of it, inform the residents within a certain distance so that they might open the windows of basement stories and thus prevent any accumulation of carbonic oxide in the lower rooms of their houses.

BRIGHTON RAILWAY STATION.

FOR nearly two years extensive works have been in progress at Brighton railway station that are estimated to cost, ere the design is completed, upwards of 100,000*l*.

Without interruption of the traffic, or disturbance of the original station roofs, a new covering has been erected over them. The station lines and platforms are on a curve which is followed, of course, by the new roof. The main roof is 625 ft. long, and in two spans of 112 ft. each, with an added bay over the goods yard on the eastern side, with a span of 46 ft. This extra space, with its additional platform, is intended for the accommodation of the traffic of the eastern branch of the company's system, which is now kept distinct from that of the main line. An important purpose designed by the alterations has been to dispense with the service of vans in the station; these now take up and deliver their loads in the goods-yard on the lower level, and no vehicles enter the station except such as are connected with the passenger traffic.

The height of the principal roof is 78 ft. from the platform level; it is divided, lengthways, by two rows of columns, 26 ft. high, into twenty-one bays. The bases are octagonal, the pedestals cylindrical, 3 ft. in diameter, and the shafts of four columns clustered, giving a quatrefoil section. The principals of the roof are elliptical, and spring from the capitals of the columns. The spandrels, of open iron work, have their perpendiculars attached to iron stanchions, 13 ft. high, that stand on the tops of the columns. Warren girders connect the stanchions longitudinally. A louvred lantern, 26 ft. wide, runs along the whole length of the two bays, which are covered in at both ends by double-glazed screens, carried down to a horizontal line between the springs of the arch. The roof contains 110,000 square feet of rolled plate-glass ¼ in. thick; it is applied without putty by Mr. T. W. Helliwell, of Brighouse, Yorkshire, on his patented plan. The opaque part of the roof is covered with Vieille de Montagne zinc. There have been 3,000 tons of wrought and cast-iron used in the structure. After dark the station is most effectively lighted by eleven arc lamps, in two rows of five each, and one in the centre of the south end platform; these are fitted up by the Hammond Electric Light Company.

On the eastern side the station has been extended about 25 ft. over the goods yard, and a building has been erected at the front, which has two floors below the station platform level. There is communication with these by an iron circular stair, and for goods by a hydraulic lift, supplied by Messrs. Waygood & Co. The head of water is sufficient for all required purposes, without the aid of steam-power in working the lift. The telegraph business, which employs from fourteen to twenty persons, is worked by the railway in concert with the Post Office Department. In this locality also a building has been erected for the transaction of the business *in transitu* of the Parcels Post. Excellent provision has also been made for the public in lavatory accommodation. The refreshment-room is fitted up in polished pitch-pine, and has the windows filled with embossed glass. A wide public stair with stone steps leads from the station to Trafalgar-street, facilitating communication with the eastern part of the town.

At the western front corner of the station another new building of two stories, devoted to dining and refreshment purposes and accommodation, has been erected.

Northwards from this block of buildings is a range devoted entirely to station purposes, for the accommodation of inspectors, guards, porters, ticket-collectors, head porter, carriage-washers, &c. Other important works for increased accommodation and convenience have been executed at this part of the station. The existing pile that forms the façade of the station will be entirely removed, and the accommodation re-arranged in a reconstructed building.

The works have been designed by Mr. H. E. Wallis, C.E., in conjunction with Mr. F. D. Banister, engineer-in-chief of the Brighton Company; Mr. W. H. Davidson has been in charge as clerk of the works. The contract is in the hands of Messrs. Kirk & Randall, of Woolwich, with Mr. R. Williams as resident manager; the ironwork has been executed by the Patent Shaft and Axletree Company, of Wednesbury. The whole of the very heavy work has been successfully carried out, without the slighest interruption to the traffic, or injury to a single passenger.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,884. E. M. Wood, Natick, U.S.A. Greenhouses. (Comp. Spec.) Dec. 28, 1883.

5,897. R. Lofthouse, Beswick. Creating currents of air for ventilation. Dec. 28, 1883.

5,933. W. E. Heath, London. Shoring up dangerous structures. Dec. 29, 1883.

5,940. J. C. Mewburn, London. Water-closets, &c. (Com. by J. E. Boyle, Brooklyn, and H. Huber, New York, U.S.A.) Dec. 31, 1883.

5,949. F. Walton, Twickenham. Wall decoration. Dec. 31, 1883.

5,971. W. Brindle and T. Brindle, Upholland. Dressing and ornamenting stone, &c. Dec. 31, 1883.

5,988. M. Dray and J. Bernard, London. Baths. Dec. 31, 1883.

Jan. 1, 1884.

6. H. W. Frampton, Winchester. Hexagon-framed metal roof, &c.

32. H. H. Lake, London. Compound for plastering, &c. (Com. by H. E. Seales, Newton, U.S.A.)

38. W. Henman, Birmingham. Sanitary traps.

46. E. L. Garbett, London. Fireproof building.

52. H. S. Simester, London. Ventilation.

84. J. D. Tucker, Bromley. Sliding window-sashes.

105. J. Robson, London. Weathering parapet walls, &c.

108. T. Jones, London. Ventilators.

132. J. S. Sweet, London. Ventilator for buildings.

144. H. Thompson, London. Domestic stoves and grates.

145. J. Bate, London. Firegrates and stoves.

153. R. Stone, London. Manufacture of cement, bricks, &c.

164. F. Lea, London. Lever catch-fastener for windows.

173. W. H. Baraclough, Edgbaston. Flushing apparatus for water-closets.

180. W. H. Barraclough, Edgbaston. Flushing water-closets.

187. C. J. Latter, New Southgate. Sheet-metal tiling for roofs.

211. G. W. Webb, Reading. Exhaust ventilators.

212. G. W. Webb, Reading. Ventilators.

256. T. W. Phillips, London. Chimneys.

259. H. H. Bridgman, London. Girder and fireproof floor.

260. H. H. Bridgman, London. Fireproof floors.

Jan. 2, 1884.

294. J. B. Gansby, Birmingham. Ornamental walls, ceilings, &c.

296. J. Walsh, London. Window ventilator.

298. J. Bruce, Birmingham. Opening and closing casements and ventilators.

299. F. Smith, Birmingham. Raising, &c., window-sashes.

326. J. Smith, Liverpool. Domestic fireplaces and grates.

344. W. F. Allcock, Birmingham. Sash-fasteners.

354. F. L. Jeyes, London. Ventilators for buildings, &c.

365. J. C. Ackroyd, Sowerby Bridge. Raising and lowering windows and sashes.

394. W. Parry, Bangor. Bricks for preventing wet from permeating buildings.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

402. E. S. Norcombe, Birmingham. Sash-fasteners.
407. F. T. Bond, Gloucester. Stove for warming and ventilating.
457. J. Jones, Johnstown. Bricks for facing buildings, &c.
469. E. Verity, J. M. Verity, and B. Banks, Leeds. Opening, &c., window skylights and ventilators.

Jan. 3, 1884.

512. J. Dean, Oxford. Self-acting open fire-ranges.
519. J. Petrie, Rochdale. Warming, rooms and buildings.
521. W. H. Renwick, Newcastle-upon-Tyne. Water-closets. (Comp. Spec.)
523. R. Pollock and T. H. Herbertson, London. Ventilators.
526. J. H. Chavasse, Kingswinford. Wall surfaces.
534. A. W. Lake, London. Fireproof concrete roofs, floors, &c. (Com. by T. Hyatt, Brooklyn, U.S.A.)
556. W. Fairweather, Glasgow. Window-fastenings, &c. (Com. by A. Kasilister, Habana.)

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

December 31, 1883.

4,450. D. Dow, Falkirk. Cooking ranges, &c. Sept. 18, 1883.

January 4, 1884.

4,213. S. B. Sutcliffe, Manchester. Tile hearths, &c. Sept. 1, 1883.
4,342. B. J. B. Mills, London. Domestic heating apparatus. (Com. by Mons. Veaux-Ducruix, Beaujeu, France.) Sept. 11, 1883.
5,281. J. S. Stevens and C. G. Major, London. Spring hinges for doors. Nov. 8, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending January 5, 1884.

2,352. E. S. Shepherd, London, and J. L. Aspinwall, Mantle Vale. Manufacture of artificial stone and cement. May 9, 1883. Price 4d.

Waste slate is used for the manufacture of stone or cement instead of sand, &c.

2,425. T. Parkinson, Blackburn. Water-closets. May 12, 1883. Price 2d.

When the seat of the closet is depressed, the water enters the bottom of a closed cylinder under the ordinary high pressure, compressing the air therein, and when the seat is permitted to rise the compressed water flows into the basin, giving a strong flush. (*Pro. Pro.*)

2,566. J. H. Johnson, London. Manufacture of sulphate of lime or plaster of Paris. (Com. by P. G. Journet, Paris.) May 22, 1883. Price 4d.

The lime is treated with a solution of sulphuric acid.

IRON AND CONCRETE.

SIR,—The ratio of the strength of concrete to that of iron by weight may be taken as 25 to 1, and not 35 to 1, the equivalent strength given by Mr. Faija; but, although so much additional weight of concrete is required for a beam of a given strength, the cost of concrete (1 in 3) is very little, if any, more than the cost of an iron beam of the same strength. A concrete and iron composite beam has the following advantages over one made entirely of iron. It is not so much affected by heat; it is not liable to lose its strength by continued oxidation; its form is more convenient for structural purposes. A valuable feature is its capability to receive artistic treatment. The comparative absence of this characteristic is the great objection to the use of iron, *per se*, for architectural work. One has only to look around at the hideous engineering creations in iron to become impressed with the difficulty of artistically utilising the great structural strength of iron and steel. The covering of iron with concrete is only imitating nature where she clothes the bony and ugly framework of humanity, to form in one instance the very embodiment of grace and beauty. The evidence given by Mr. Faija to prove that concrete beams are incapable of deflecting without fracture is highly unsatisfactory,—indeed, he (Mr. Faija) hardly appears to be certain the cracks are the result of vibration and deflection.

B. H. THWAITE.

*** This interesting correspondence must now close, unless Mr. Tarver, who initiated it, wishes to make any summary of his ideas as to the suggestions brought forward.

SALFORD SEWERAGE WORKS.

SIR,—Referring to the description of these works in your journal of the 24th of November last, I beg to be allowed to state that the civil engineering portion of the works was designed by, and the conception of the whole arrangement is due to, myself. As you correctly state, the object is to deal with the sewage in a similar manner to that adopted at Leeds, the civil engineering portion of which works I also designed.

I was engaged in designing the Salford utilisation of sewage works (after having completed the outfall sewage works) at the time I resigned my appointment under that Corporation, and was afterwards employed by them to complete the designs and prepare specifications, quantities, and forms of tender for letting the works by contract.

The present Borough Engineer has altered the character of the buildings, and has raised the level of the tanks from 16 ft. to 43 ft.

There is not the slightest necessity to pump the sewage to a height of 43 ft. (viz., 27 ft. higher than I proposed, or than I designed at Leeds), or to elaborate the buildings.

The site of the Salford works is identical in character with that at the Leeds works, both as regards strata met with, level of the river, and flooding of lands adjoining the sewage works.

The Leeds works cost 40,000*l.*, to deal with the same quantity of sewage.

The Salford Works, by the alterations to my design, have cost 100,000*l.*, and I estimate, from experience in extensive pumping works, that the extra cost of working expenses will involve the Corporation in an additional expenditure amounting to a sum of at least 1,300*l.* per year.

The outfall or intercepting sewer was also designed by myself, and constructed by contract under my direction, except a short portion of the upper end in progress and nearly completed when I left the service of the Corporation. This sewer is equal to 8 ft. 6 in. in diameter at the outfall, and has more than met the purposes for which it was intended, inasmuch as it takes off the water from the lowest cellar floors throughout the borough when the water in the river is many feet above the streets.

The magnitude of the whole undertaking is such that I cannot afford to stand on one side and allow others to lay claim to my hard-earned experience during the past twenty-seven years. With much greater force does this remark apply now that I am in private practice and have to look to the public at large as my employers, instead of holding an official appointment under a wealthy Corporation.

ALFRED M. FOWLER, Mem. Inst. C.E.

ENSILAGE.

SIR,—I want to construct a "Silo" in a gravel-pit, 18 ft. by 12 ft. by 10 ft. deep, having 3 ft. to 4 ft. of water in it. Will anyone who has had experience in such matters kindly advise me if the following plan will succeed?

I propose pumping out the water and building a concrete floor 1 ft. thick, and concrete walls 1 ft. thick, and just high enough to flood the whole until the concrete is sufficiently strong to resist the lifting strain of the water. When this is effected, which I suppose will take about two months, I propose to then again pump out all the water, raise the walls in brickwork the necessary height, and cement the whole with 1 in. of Portland cement and sand in equal parts.

My doubts are as to the setting energy under water of Portland concrete, its porosity, and also whether the cement may be relied upon to keep out damp. Any improvements or suggestions will greatly oblige B.

CHURCH BUILDING NEWS.

Govan.—At a meeting on the 28th ult. of the landward heritors of the parish of Govan it was resolved to proceed with the erection of the new parish church, without hall and tower, for the present. The architect from whose plans the building is to be erected is Mr. R. Rowand Anderson, of Edinburgh. The cost of the building (exclusive of the hall and tower, but inclusive of the sum to be paid for an extension of the site) will be 16,189*l.*

Old Radford (*Notts*).—A carved oak pulpit has been executed for Old Radford Church by Messrs. Jones & Willis, of Birmingham and London. The same firm have also supplied a handsome carved stone and marble reredos to St. Andrew's Church, Netherton, from the designs of Mr. G. W. Drinkwater, of Oxford.

Gorey, Wexford.—A memorial lectern has just been placed in the parish church at Gorey, Wexford. It is constructed wholly of English oak, and is in the Perpendicular style. A central and richly-moulded, traceried, and carved shaft stands upon a base from which rise angle and supporting columns, attached to the central stem by crocketed and cusped buttresses. Above the capital is a boldly-carved figure of an eagle, whose back and outstretched wings bear the Bible. The lectern is the gift of the parishioners of Gorey, in memory of the Rev. Charles Hamilton, who, upon the disestablishment of the Church of Ireland, purchased and presented the glebe lands to the parish. The lectern is the work of Mr. Harry Hems.

Lyminster.—On the 27th ult. the newly-restored chancel of St. Mary Magdalene, Lyminster, near Arundel, was re-opened by the Bishop of Chichester, after restoration. The work has been carried out by Mr. Gordon Hill, who has rebuilt the chantry on the north side of the chancel for the double purpose of an organ-chamber and vestry, and has furnished the chancel with seats for the choir.

Holsworthy.—On the 1st inst. the Bishop of Exeter re-opened the Church of SS. Peter and Paul, Holsworthy, which, with the exception of the tower, has been almost rebuilt. The chancel was reconstructed by the rector (the Rev. G. V. Thornton) in 1881–2, and now the nave has been rebuilt, with the addition of a north aisle, an organ-chamber, and a vestry, from the designs of Mr. Otho Peter, of Launceston.

DISSENTING CHURCH-BUILDING NEWS.

Tunbridge Wells.—The new Baptist Church here was opened on New Year's Day. It has been erected by Mr. S. Wood, builder, Weybridge, Surrey, from the plans and under the superintendence of Messrs. Lander & Bedells, architects, London. Externally the building is in the Early Decorated style, the materials used being red bricks with dressings of concrete and Bath stone, and ornamental yellow brick facings. The building is warmed by hot-water (low-pressure) apparatus, supplied by Mr. A. T. Young. For ventilation, Tobin flues are attached to the buttresses of the walls. These were supplied by the Æolus Water Spray Ventilating Company. The pews are of low open form, and instead of the usual book slab, there is a "pocket" made of a slanting board. The building seats about 650, of which there is downstairs accommodation for about 370. The total cost of the work, inclusive of the site, is 5,500*l.*

Kidderminster.—The new Meeting House (Unitarian) has been re-opened for service, after undergoing extensive alterations and enlargement. The work has been carried out by Mr. R. Thompson, builder, of Kidderminster, from the designs and under the superintendence of Messrs. Payne & Talbot, architects, of Birmingham. The chapel has been extended some 25 ft., which together with the enlargement of the galleries, provides accommodation for about 200 additional worshippers. The new front elevation is in the Perpendicular style, and is built of a local reddish brown stone, with the buttresses and moulded and carved work in Bath stone. The total cost will be about 2,500*l.*

Clevedon, Somerset.—In our notice of the opening of a new Wesleyan Chapel at Clevedon, last June, we stated that the Committee intended erecting a manse on a portion of the adjoining site. This part of the work has now been commenced, and, when completed, will form, together with the Chapel, one of the most complete Wesleyan Methodist Trust properties in the West of England. The chapel is designed in the Early English style, with which the manse will harmonise. The contract for the latter has been taken at £821, by Mr. W. A. Green, of Clevedon, who was the contractor for the erection of the chapel. The architect for the whole of the buildings is Mr. Herbert J. Jones, of Wellington-chambers, Bristol, and the total cost, including boundary walls, piers, gates, and railings, will be about 4,000*l.*

STAINED GLASS.

Prestbury.—The ancient parish church of Prestbury, near Macclesfield, has been supplied with a two-light stained-glass window by Messrs. Mayer, of Munich. The window, which represents the "Prodigal Son's Return," is placed in the west end of the south aisle, the cost being defrayed by Dr. Richmond, formerly of Stretford-road, Manchester. Prestbury Church is one of the oldest in Cheshire, and has recently undergone restoration from the designs of the late Sir Gilbert Scott, R.A.

Lambeth.—It is in contemplation to place two painted windows in the ancient parish church of St. Mary, Lambeth,—one in memory of Archbishop Tait, and the other in recognition

of the services rendered to the parish during the last thirty years by the late rector, the Rev. J. F. Lingham, who has recently resigned the living. Should this project be carried out, every window in the church will then be filled with stained glass.

Brayton.—During the closing days of 1883 two stained-glass windows have been placed in Brayton Church, near Selby, and three in St. Mary's Church, Hambleton. The windows at Brayton are the east window of the south aisle and one of the windows on the south side of the chancel. The windows in Brayton Church are the gift of Mrs. Smith, of Hambleton House. Those in Hambleton Church are the joint gifts of that lady and her daughters. The subjects are taken from the life of our Lord. The windows are the work of Messrs. Ward & Hughes, Soho-square, London.

MEETINGS.

MONDAY, JAN. 14.

Surveyors' Institution.—8 p.m.

London Institution.—Lecture by Mr. Henry Blackburne on "The Art Season of 1883." 5 p.m.

TUESDAY, JAN. 15.

Royal Institution.—Mr. Reginald Stuart Poole on "The Study of Coins and Medals." 3 p.m.

WEDNESDAY, JAN. 16.

Civil and Mechanical Engineers' Society.—Paper by Mr. George Simonds on "The Science of Mechanics as Applied to the Fine Arts" 7 p.m.

Society of Arts.—8 p.m.

THURSDAY, JAN. 17.

University College.—Professor C. T. Newton on "The Ionic Monument at Xanthos." 4 p.m.

Parkes Museum of Hygiene.—Lecture by Mr. T. Pridgin Teale on "Economy of Coal in Private Houses." 8 p.m.

St. Paul's Ecclesiological Society.—The Rev. W. F. Creeny, M.A., on "Foreign Brasses." 7·30 p.m.

London Institution.—Mr. H. Dixon on "The Nature of Explosions." 7 p.m.

FRIDAY, JAN. 18.

Architectural Association.—Paper by Mr. Aston Webb on "Decorative Plaster." 7·30 p.m.

Miscellanea.

Fall of a Railway Bridge: Seven Men Killed.—On Sunday morning last a bridge on the London & North-Western Railway, near Coppull Station, between Wigan and Preston, fell in, killing Mr. James Hammond, bridge and station inspector, and six other *employés* of the Company. The bridge in question carried the high road over the railway, and was constructed entirely of brick, the single arch spanning the line being formed of three rings of brickwork, the backing extending into the solid clay on each side. The bridge was erected by the old North Union Railway Company as long ago as 1837. It seems that latterly there has been some reason to suspect the stability of the bridge, and, although the work of doubling the line between Wigan and Preston (now in progress) could not have proceeded much further without this bridge having to be dealt with, it had been determined to erect, first, a temporary wooden bridge, preparatory to a bridge being placed there with substantial iron girders. The exigencies of the week-day traffic, which is somewhat throttled at this point, pending the doubling of the lines, as well as the convenience of the public using the bridge, made it desirable that the work should be done on Sunday, and, early in the morning, a special train, containing a large staff of workmen from the engineering department, in charge of Mr. Hammond, left Manchester for Coppull. On arriving there they found (according to the report in the *Times*) that the preliminary work of removing earth from the summit and the approaches to the bridge had been accomplished, and as soon as the last passenger train from Wigan had passed active operations were commenced. Some of the workmen were sent on to the bridge to remove the first tier of brickwork, and others, under the personal guidance of Mr. Hammond, who stood in the six-foot way, were proceeding with arrangements for placing the supports required for the temporary bridge when, without any warning, the whole structure fell with a terrible crash, killing Mr. Hammond and six of his men, and inflicting serious injuries on others who were on the line, and slighter but still severe hurts upon several of the workmen who had been on the bridge itself and had fallen with it. The inquest was formally opened on Monday last for the identification of the bodies, and was adjourned until Monday next.

Important Rating Appeal Case.—On the 4th inst., at the West Sussex Quarter Sessions, the magistrates had before them an appeal from the Fathers of the New Carthusian Monastery, at Cowfold, or as it is better known, St. Hugh's, Parkminster, M. Edouard De Gaulejac, the sub-prior, being appellant, and the Assessment Committee of the Cuckfield Union respondents. The case excited considerable interest in the county of Sussex, not only on account of the novelty of rating religious houses in England, but also from the magnitude and unique character of the buildings, which are stated to have cost about 200,000*l.*, and stand on an area of upwards of nine acres. The case lasted the whole day, and scientific witnesses were called on both sides. For the appellant were Mr. J. W. Penfold, of Westminster; Mr. Tewson, of the firm of Debenham, Tewson, & Co.; and Mr. Charles Hadfield, of Sheffield, the latter gentleman having to speak more especially to the planning and traditions of the Carthusian and other religious houses. For the respondents were Mr. C. J. Shoppee, architect and surveyor to the Grocers' Company; Mr. Ryde, senior, and Mr. Watney, of the firm of Norton, Trist, Watney, & Co. Mr. Lumley Smith, Q.C., was leading counsel for the appellant, instructed by Messrs. Arnold & Co., of 60, Carey-street, and Mr. Meadows White, Q.C., for the respondents. After a patient and exhaustive hearing the magistrates decided upon reducing the rate from 1,750*l.* net to 1,275*l.* net, the Chairman remarking upon the unique and difficult nature of the inquiry, and complimenting both sides on the skilful way in which the case had been conducted. By this decision costs will follow the issue.

Growth of Newcastle-upon-Tyne.—We recently referred to the building operations at Elswick, and now we learn from the *Newcastle Daily Chronicle* that it is proposed to lay out the South Benwell estate, to the south-west of the city, for building purposes. The architect who has been entrusted with the laying out of the estate is Mr. Wm. Glover, Market-street, Newcastle. The South Benwell estate comprises about 100 acres, and it has been decided to lay out one-third of this immediately for building sites. This portion consists of about 140,000 superficial yards, and a large part of it has already been sold. It is contemplated to erect eleven new streets upon it. Nearly the whole of the front streets will be of a uniform width of 36 ft., but Clara-street will be 10 ft. wider, while Atkinson-road, which terminates the west-end portion of the estate, and Buddle-road—intended to form a main artery through the estate—will be each 50 ft. wide. The whole of the back streets will attain a uniform width of 24 ft. each. Nearly 600 houses in all will be built on the ground. Two-thirds of these will be in tenements or double flats, and the others will probably consist of self-contained dwellings.

Reredos, St. James's Church, Clapham Park.—Against the wall at the east end of the chancel of this church (which has been for the last twelve years an absolute blank) has just been placed a reredos, containing the Tables of the Law, together with the Lord's Prayer and the Apostles' Creed. It is the gift of a member of the congregation, Mrs. William Hooper, as a memorial to her husband, the late Mr. William Hooper, of Beechwood, Clapham Common. The architect is Mr. Arthur J. R. Fenning, and the work has been executed by Messrs. Jones & Willis. The reredos may be briefly described as an arcade of twelve arches, richly moulded in Caen stone, extending the whole width of the chancel, supported by delicate shafts of Derbyshire alabaster, with carved capitals, carried on a low wall of ashlar. The four panels at each side are diapered with chasing of alternate oak and vine leaves, and the idea of the oak and vine is carried out through the entire carving of crocket and finials. The four centre panels contain the inscriptions, and are grouped together with pointed gables, richly crocketed and crowned with finials.

An Opera-house Burned Down.—A telegram from Philadelphia says that at Meadville, Pennsylvania, the opera-house, with some adjoining buildings, was burnt down on Tuesday last, the loss occasioned being estimated at 250,000 dols.

Parkes Museum.—A lecture will be given here on Thursday next by Mr. Pridgin Teale, of Leeds, on "Economy of coal in private houses." The chair will be taken by Professor G. M. Humphry, M.D., F.R.S.

Labour and Wages in Australia.—In some trades wages have risen, and in a few others have fallen, during the last few years. The general tendency, however, is upwards, especially in the skilled branches of labour. In agricultural work, the upward tendency is more strongly perceptible. Thus the rates for married couples on stations have risen from 55*l.* to 65*l.* in 1876, to 60*l.* to 80*l.* in 1883. The wages of farm labourers have risen to 40*l.* to 52*l.*, while only in the case of country blacksmiths have wages declined, the rates for such being now 75*l.* to 80*l.* per annum. The Colony of New South Wales (according to the officials of the Government Immigration Office, Sydney) is capable of readily absorbing any amount of skilled agricultural labour, especially that of the handy kind, without affecting the current rates of wages. Agricultural labour is, in fact, in more demand than artisan labour, and good industrious hands are certain to do well in a country where the work is not harder than in England, while the food and pay are infinitely better.

Electric Lighting.—Edison's Indian and Colonial Electric Company are lighting the Parliament Houses at Sydney, New South Wales, under contract with the Government, and also the Government railway station at Albury, the junction station between Victoria and New South Wales. They are also lighting part of the General Post-office in Sydney. During the past year they have lighted the volunter camp at Sydney; in Queensland they have a contract with the Government to light the Government House; and they are also lighting the Government printing establishment. The first mill lighted by electricity in the Australian colonies was fitted up by the Indian and Colonial Company in Queensland. In New Zealand they are also lighting the Government printing-offices at Wellington. The report with reference to the whole of these works in the various colonies has been uniformly satisfactory. In Melbourne the company has been lighting one of the Chambers of Parliament House for many months past with the greatest success.

Proposed Club and Institute for Working Men.—The directors of the Artisans', Labourers', and General Dwellings Company (Limited) passed the following resolution on December 20th, 1883, viz.:—That the Board having been informed that a feeling exists in favour of establishing a Workmen's Club and Institute on the Noel Park Estate, for the use of the workpeople, it is hereby agreed to grant the free use of a house and shop suitably fitted up for a club for twelve months, provided at least 100 of the workmen on the estate are prepared to form themselves into a Club and Institute, to be managed by a committee to be appointed by themselves."

Employers' Liability.—An action under the Employers' Liability Act was tried at Derby County Court on Tuesday, in which a labourer named Wright claimed three years' wages, at a guinea per week, of Eastwood, Swingler, & Co., ironfounders, by reason of his having lost his arm through the negligence of the defendants' foreman, in not having caused some girders which were being put up on the Midland Railway Company's works to be sufficiently secured. Ten girders, weighing 15 cwt. each, fell down, and one smashed the plantiff's left arm. The action was defended by the Employers' Liability Assurance Association. The Judge gave judgment for the plaintiff for 163*l.* 16s., the full amount.

Schools, Caverswall.—At the last meeting of the Caverswall School Board, held on the 28th ult., the Clerk (Mr. H. Marson) said that the deficiency of school accommodation in the parish had now been fully met by the enlargement of the voluntary church schools at East Vale, providing for thirty additional scholars, and by the erection of new schools at Adderley Green, which will accommodate 225 scholars. These schools have been erected by Messrs. Inskip, of Longton, from plans prepared by Mr. T. P. Hulse, architect, at a cost, including the site and fittings, of about 2,350*l.*

"An Improved Form of Silo."—In reference to the article bearing this title in our last number, we are asked to say that the invention has been patented by Mr. Potter.

Central Technical College.—We are asked to mention that Messrs. Gibbs & Canning furnished the exterior terra-cotta work in this building, illustrated in our last issue.

TENDERS.

For pair of houses, Woodville-road, New Barnet, for Messrs. Baker & Manning. Mr. Joseph White, surveyor:—

Gregory	£1,189	0	0
Cox	1,140	0	0
Butcher	1,086	0	0
Battrill	1,076	12	0
Noble	1,065	0	0
Pocock	1,047	0	0
Ellwood	998	0	0

For repairs and alterations at No. 67, Atlantic-road, Brixton, for Mr. H. J. Mash. Mr. Alfred Wright architect, Belgrave House, 190A, Brompton-road:—

Crabb & Son	£255	10	0
J. Marsland	211	0	0
Peacock Bros.	198	15	0
Smith	197	10	0

For laying out lawn tennis ground on the Cumberland Park Estate, Acton. Mr. Alfred Wright, architect:—

Atkins	£380	0	0
Nowell & Robson	350	0	0
Narroway	292	0	0

For external repairs to Somers Lodge, Brading-road, Upper Tulse Hill. Mr. Alfred Wright, architect:—

Bliss	£176	0	0
Trenaman & Son	165	0	0
Stapleton & Comins	160	0	0
Crabb & Son	106	10	0

For the erection of new lecture-hall on the site of St. John's Church and Parsonage, Lewisham. Mr. Joseph Clever, architect. Quantities by Mr. H. Bradley:—

Hodson	£1,150	0	0
Steel Bros.	1,135	0	0
Woodward	1,099	0	0
Greenwood	1,076	0	0
Staines	1,074	0	0
Killby & Gayford	1,045	0	0
Jerrard (accepted)	1,044	0	0
Kennard (withdrawn)	986	0	0

For the erection of new schools, master's house, boundary-walls, and offices, for the Snydale School Board, at Snydale, near Pontefract, Yorks. Mr. W. Shackleton, architect, Pontefract. Quantities by the architect:—

Walker, Bros., Castleford	£2,198	0	0
G. Barstow, Pontefract	2,170	0	0
Jackson, Bros., Goole (accepted)	1,997	0	0
J. Tattersall, Wakefield	1,613	1	1
A. Spencer, York	1,357	0	0

[Architect's estimate, £2,300.]

For the erection of a Mission Hall in Victoria-street, Cambridge. Mr. Henry G. Bishop, architect, Cambridge:—

Langford	£529	10	0!
Alderton	362	0	0
Parcell	359	10	0
Apthorpe	349	0	0
Pamphillon	297	0	0
Pamment & Co.	289	0	0
Kerredge & Shaw (accepted)	247	0	0!

For rebuilding Ship and Billet Tavern, and three shops at East Greenwich. Messrs. Williams & Son, architects:—

Langridge & Son	£3,900	0	0
Marr	3,877	0	0
Staines & Son	3,682	0	0
Ashley	3,390	0	0
Jackson & Todd	3,275	0	0

For the completion of sixteen villas in Bensome Manor-road, Thornton Heath. Mr. Owen Lewis, architect, 79, Mornington-road:—

C. Turner	£3,996	0	0
Millward	3,220	0	0
T. Barwell	3,080	0	0
T. Norris	3,005	0	0
Cutlan	2,968	0	0

For repairs and decorations to Hanger Vale House, Ealing Common. Messrs. Glasier & Sons, surveyors, 41, Charing Cross:—

Haward Bros.	£271	0	0
Kinnimont & Sons	231	11	0
Clarke & Mannooch (accepted)	196	0	0

For alterations and additions to bank premises at Dartford, for the London and County Banking Company. Mr. W. G. Bartleet, architect, New Broad-street. Quantities by Messrs. Stonor & Son:—

J. G. Naylar & Son (accepted)	£2,637	0	0

For sundry works at No. 2, Carlton Hill, St. John's Wood, Mr. Robert Willey, 66, Ludgate-hill, architect:—

Hayward & Son	£160	0	0
W. Bealby	139	0	0
J. Myring, St. John's Wood	125	0	0

For engineering works at the new Infirmary, Harrow-road, for the Guardians of the Poor of Paddington. Messrs. A. & C. Harston, architects, 15, Leadenhall-street:—

Contract No. 1.—Laundry Machinery and Fittings, Steam Boilers, Engine, Hydraulic Lifts, &c.

W. J. Fraser & Co.	£3,394	0	0
Bradford & Co.	3,321	0	0
Clements, Jeakes, & Co.	3,209	7	0
Benham & Son,* Wigmore-street	3,100	0	0

* Accepted.

Contract No. 2.—Kitchen and Scullery Fittings.

Clements, Jeakes, & Co.	£632	0	0
Benham & Son	580	0	0
Bradford & Co.	566	0	0
W. J. Fraser & Co., 89, Commercial-road (accepted)	535	0	0

Contract No. 3.—Tanks, Mains, Hydrants, Sanitary Fittings, Warming, &c.

Clements, Jeakes, & Co.	£3,785	17	6
Clark, Bunnett, & Co.	3,487	0	0
Rosser & Russell	3,123	0	0
Stidder & Co., Southwark Bridge-road (accepted)	2,750	0	0

SPECIAL NOTICE.—Correspondents are desired to send *full lists* of persons tendering, *with the amount of each tender*. In future, *no single name will be given without the amount of the tender*, and not then unless we have the assurance of the sender that there was no competition.

TO CORRESPONDENTS.

Clericus (cannot advise without knowledge of circumstances, which could only be gained on the spot).—H. H. (thanks).—W. S. (see below).—K. and M. (cannot approve such a scheme).—K. & Sons.—W. G. S. (next week).

Correspondents should address the Editor, and *not* the Publisher, except in cases of busines.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

PUBLISHER'S NOTICES.

THE INDEX and TITLE-PAGE for Volume XLV. (July to December, 1883) are given as a Supplement with this Number.

A COLOURED TITLE-PAGE may be had, gratis, on personal application at the Office.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING-CASES (Cloth), with Strings, to hold a Month's Numbers, price 2s. each; also

THE FORTY-FIFTH VOLUME of "The Builder" (bound), will be ready on the 16th inst. price Twelve Shillings and Sixpence.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

SPECIAL.—ALTERATIONS in STANDING ADVERTISEMENTS or Orders to Discontinue same, must reach the Office before TEN o'clock on WEDNESDAY mornings.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office, 46, Catherine-street, Covent-garden, W.C. free of charge.* Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS,

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about THIRTY words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to

DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, PREPAID. To countries within the Postal Union, 26s. per annum. Remittances payable to DOUGLAS FOURDRINIER, Publisher, 46, Catherine-street, W.C.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [ADVT.

SUMMER-DRIED
Corsham Down Stone
For Winter Use.
PICTOR & SONS, BOX, WILTS.
[ADVT.

Doulting Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doulting Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset. — Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [ADVT.

Doulting Freestone,
HAM HILL STONE,
BLUE LIAS LIME
(Ground or Lump),
Of best quality, supplied from their own Quarries and Kilns by STAPLE & HANN, Stoke, Ilminster. Agent, Mr. H. MITCHELL, 5, Augustus-road, Hammersmith, London, W. [ADVT

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.

Immense quantities of
DRY WAINSCOT,
DRY MAHOGANY,
DRY WALNUT,
in all thicknesses.
B. J. HUDSON & SONS,
Whitfield-st., W., and Great Peter-st., S.W.
London. [ADVT.

MICHELMORE & REAP,
Manufacturers of
CHARLES COLLINGE'S PATENT.
COLLINGE'S PATENT HINGES,
LEVER, SCREW, & BARREL BOLTS,
Self-Acting "FALL DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every Description.
36A, BOROUGH ROAD,
DISCOUNT TO BUILDERS. LONDON, S.E.

GOLD AND SILVER MEDALS AT AMSTERDAM EXHIBITION.
ZINC ROOFING.
F. BRABY & CO.,
LONDON, LIVERPOOL, GLASGOW.
VIEILLE MONTAGNE BRAND.
NO SOLDER.
NO EXTERNAL FASTENINGS.
PARTICULARS ON APPLICATION. CHIEF OFFICE: 360, EUSTON ROAD, LONDON.